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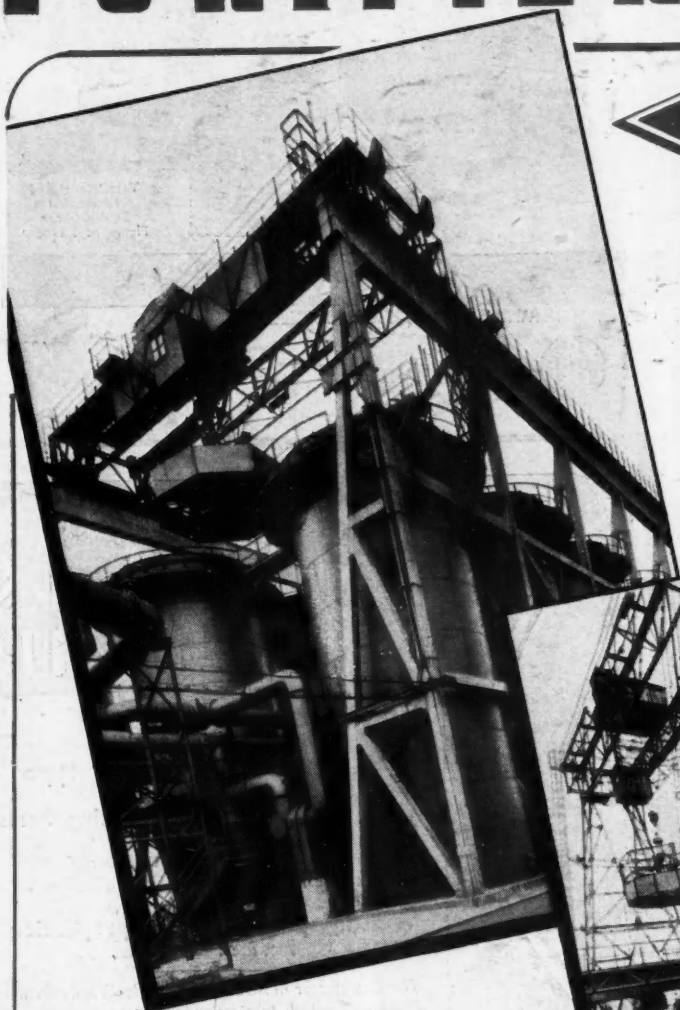

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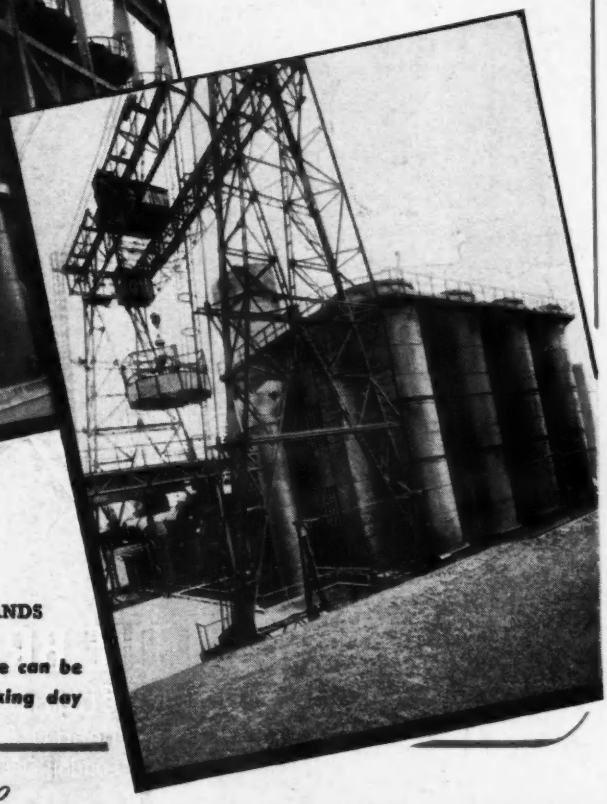

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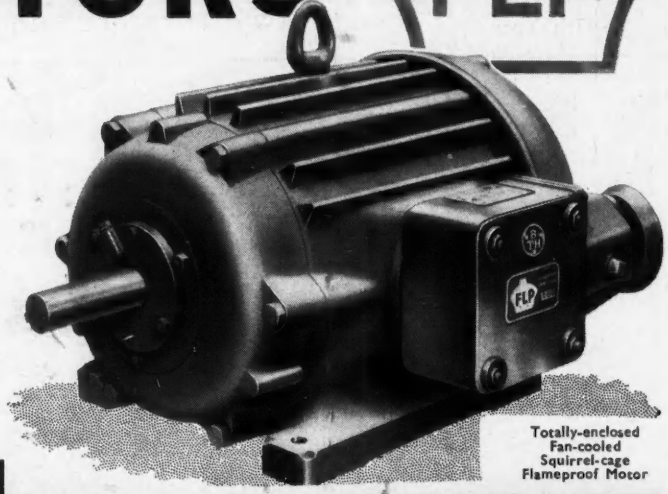

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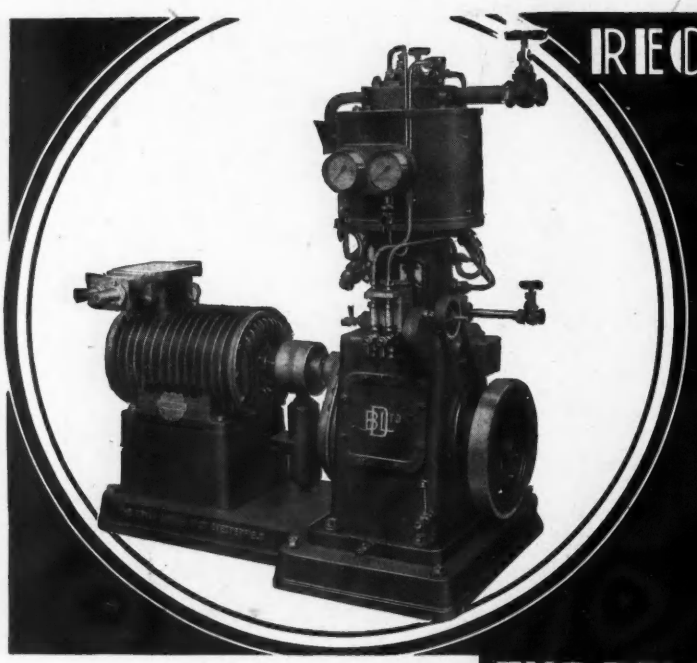

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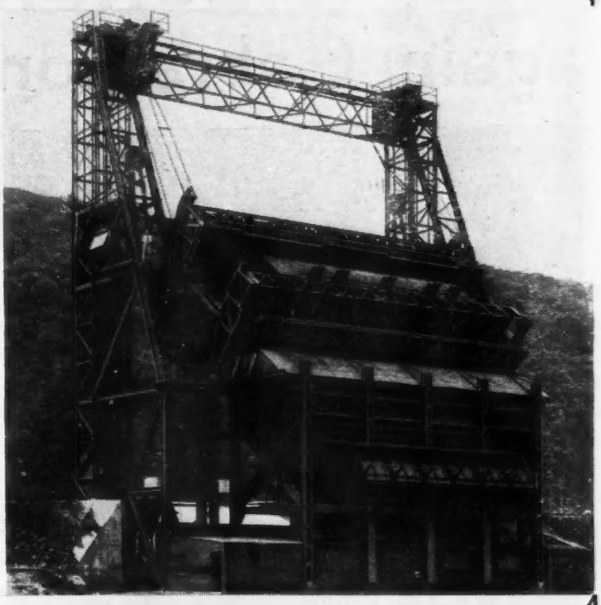

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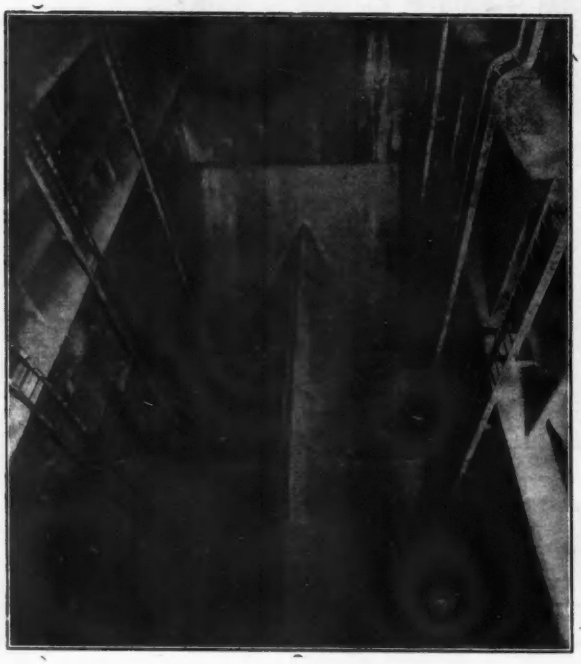

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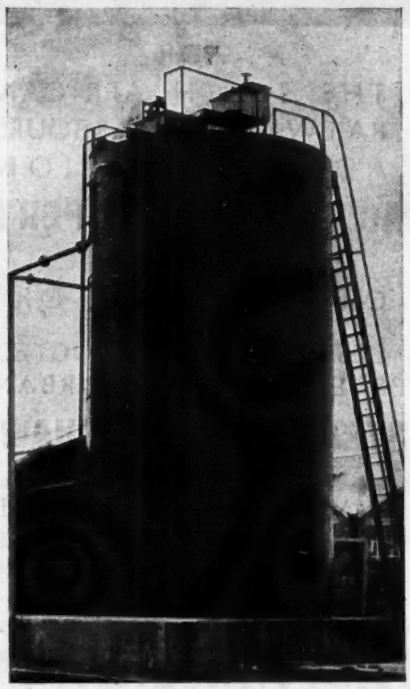

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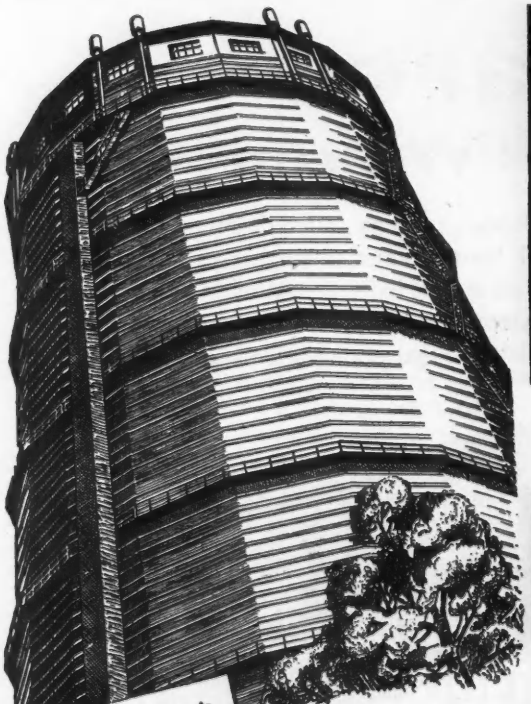

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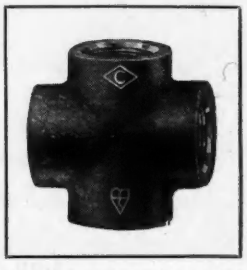

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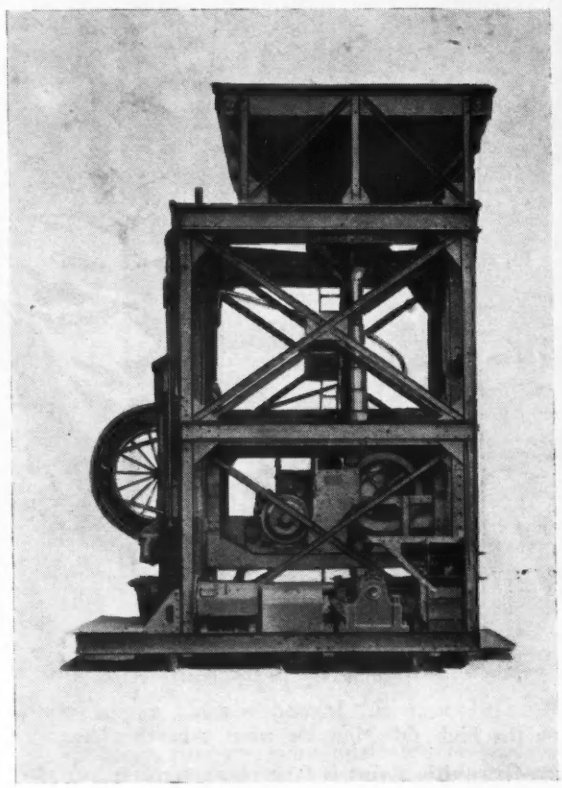

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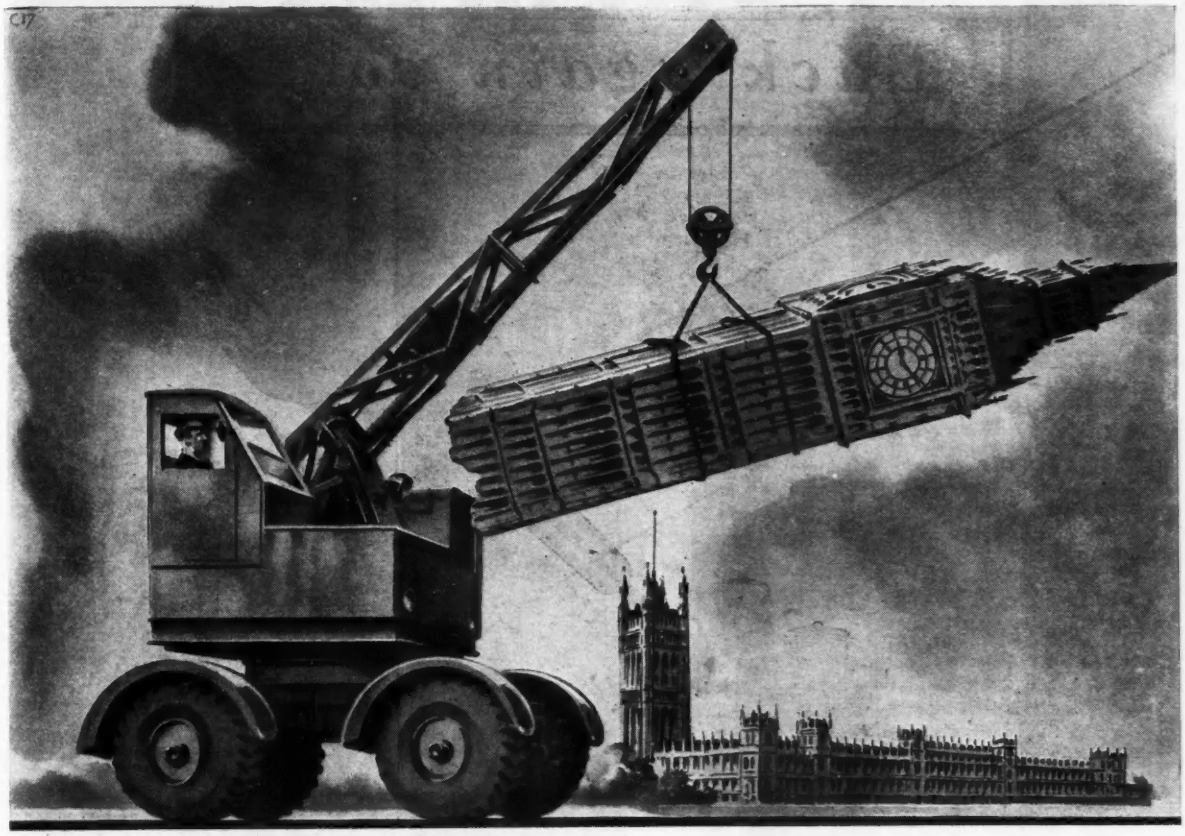

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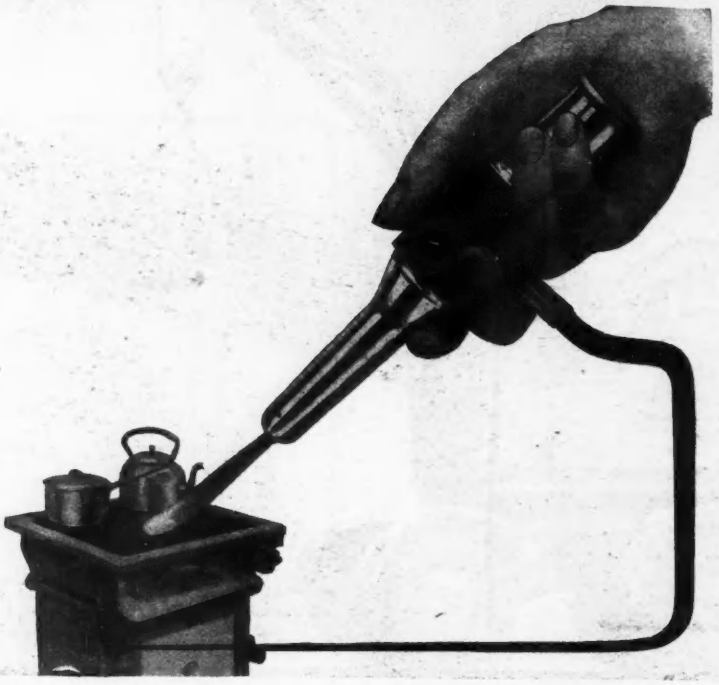

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GAS JOURNAL, MAR. 21, 1945

VOL. 245 97th YEAR No. 4270

EDITORIAL NOTES

GAS AND ELECTRICAL APPLIANCES POST-WAR

PEP (Political and Economic Planning), that independent, non-profit making organization pledged to avoid personal publicity in its statistical tasks—and its missions would appear to be many and varied—has prepared a report on household appliances. However mysterious the organization, which is essentially a fact-finding body, there is no doubt that its reports command and, indeed, get respect. The present report—prepared, it should be noted, at the request of the Board of Trade—is, we understand, a comprehensive document though dealing for the most part with the "demand side." The result of a study of the market for household appliances produced by the light engineering industries before the war, the design of the appliances that were available, and the market as it may exist after the war, the report will be published later in the year. In the meantime P E P has issued a broadsheet (No. 231) summarizing parts of the full report; and in the broadsheet alone, covering space heating, water heating, and cooking appliances, refrigerators and drying cabinets, and other miscellaneous equipment, there is a formidable mass of figures calling for a stout digestion while inviting speculation. They concern all suppliers of domestic fuel, and not least the Gas Industry; they merit attention.

We will not attempt the clumsy task of considering in detail and *seriatim* the many points which crop up at every turn in studying the statistics set out in the broadsheet—which, as we have mentioned—is but a mere summary of the report itself. In general, the information given appeals to us as a useful guide and as a good background on which to frame effort. Rightly priority number one for all British homes is stated as a piped hot-water supply. The Water Bill presented to the House of Commons last month by the Minister of Health imposes for the first time on that Minister the statutory duty of promoting throughout England and Wales the provision of adequate water supplies; a preliminary Act passed last year will provide grants to the amount of £15,000,000 to help the extension of piped water supplies in rural areas after the war. The possibilities of the water heating load are apparent. Before the war about 2,500,000 houses, the vast majority rural, were not piped for gas. Basing its suggestions on pre-war trends, P E P says that within five years of the end of the war all but the most isolated houses will have a supply of electricity. As for gas, the view advanced is gloomy—simply that gas supply is unlikely to be extended to sparsely populated rural districts. Yet, there is evidence to show that where gas is so extended it is warmly welcomed by the country people whether or not electricity is available. Under present conditions, the report states, preferred methods of water heating would be found to vary broadly in the following way: First, solid fuel for income groups where running costs are the prime consideration; secondly, gas where the additional convenience is appreciated and some additional expense can be borne; and, thirdly, electricity "where gas is not available or where a preference exists and the consumer is prepared to pay the additional running cost." The demand after the war is divided into three classes: New houses, new demand in existing houses, and replacement. Estimates put forward in the report for the total demand over a 10-year period are: Solid fuel, 8,278,000; gas, 2,958,000; electric, 884,000—roughly in the ratio of 8 : 3 : 1. Much, we suggest, can happen, through the efforts of the three fuel supply industries concerned, in a ten-year period to modify this ratio. The report itself admits that the figures may over-estimate the number of solid-fuel appliances needed.

We turn to cooking appliances, and at once encounter the results of yet another questionnaire of the "What would you like?" type, the value of which we have never been able to assess. This time we find the results of an enquiry by the National Union of Townswomen's Guilds into public preferences for particular types of cooking apparatus. The results are expressed as percentages. We give three of them bearing in mind that pre-war the ratio of gas to electric cookers installed was about 8 to 1. Of those people addressed in England and Wales, 2.9% voted for coal, 36% for gas, 18% for electricity. In Scotland—and it is extremely difficult to find any logical explanation for this—6% liked coal, 26% gas, and 46% electricity. The report estimates the sales of all cookers in the 10-year period after the war as 15,000,000 (5,000,000 in new houses, 10,000,000 in existing houses); and of the 5,000,000 cookers in new houses it is thought that about 2,800,000 may be gas, 1,200,000 electric, and 1,000,000 solid fuel. Replacement demand is put at 5.6 million gas cookers, 2.4 million electric cookers, and 2 million solid fuel cookers. Leaving solid fuel cookers aside we have the overall gas to electric cooker ratio of rather less than 2½ : 1. What, we would ask, has happened since the beginning of the war, during the period of "truce" between gas and electricity, to invalidate the pre-war gas : electric cooker ratio? To what extent is wishful thinking responsible for expressed desires to use electricity? The question is not the least important one confronting the Gas Industry.

WHAT DOES P E P IMPLY?

AND to what extent is P E P justified in adopting the prophetic mantle regarding the numbers of the various types of domestic appliance which it considers will be required after the war? The question of the apportionment of the cooking load—*i.e.*, the numbers of gas and electric cookers installed in homes after the war—between gas and electricity is one of far-reaching significance and consequence, and any decisions must have regard to the national aspect of the right use of coal and must take into account the economic aspect, the ability of the consumer to pay for the heat services he gets. What justification has P E P in suggesting that the 10-year period following the war will see a complete transformation in the domestic cooking load shared by gas and electricity, a revolutionary change from the existing ratio of, say, 8 : 1 to a ratio not far removed from 2 : 1? The P E P report, with all the implications behind the statistics of estimated demand, comes at a time when the problem in its broadest sense is being studied, we take it, by both the Simon and the Heyworth Committees appointed by the Minister of Fuel.

As everybody appreciates, the electrical industry has developed very greatly indeed since the beginning of the war, and this development meets with widespread publicity. Only last week Sir Stafford Cripps, Minister of Aircraft Production, referred to the "almost embarrassing advance in the use of electricity in this country, saying that after the war the field would be open to a most extensive development of electrical appliances of all kinds." "To have real success in the electrification of the country," he said, "we must bring down the price of generating

power, and must regard the market for appliances not as a luxury or semi-luxury market, as we did before the war, but as one of the necessities of modern civilization. That means the introduction of mass production, on the very latest and most efficient lines, with massive tooling up and ample capitalization." We know how the electrical industry is planning for extension in generating capacity. We have the cut and dried programme for an extension of 3,000,000 kilowatts of new plant, with a contemplated expenditure not far short of £100,000,000. Announcement of this was followed shortly by the report on the Severn Barrage, with an estimated addition to electrical capacity of 2,100,000 kilowatts at an estimated cost of £47,000,000 —a scheme which, the report concludes, will be economically worth while only if the price of coal is over 49s. a ton by about 1962. The deduction to be drawn from all this contemplated capital expenditure is that electricity to the community, if more abundant, cannot, in relative terms with other forms of heat energy, be cheap.

And, considering the cooking load particularly and rather more closely, how would a marked change in the existing gas : electric cooker ratio affect the fuel budget of the domestic consumer? Before the war the revenue from electricity used for all domestic purposes was 1½d. a unit. About 25% of the domestic consumption was for lighting and the remaining 75% for heating and cooking. The heating and cooking rate, to compete with gas at 10d. a therm, had to be ½d. a unit. This meant that electricity for lighting (either as such or concealed as standing charge) averaged at least 4½d. a unit. Extension of the cooking load could only be met economically by raising the rate for lighting (again either as such or concealed as standing charge). That is, in competition with gas. Values have changed, but the argument remains valid. We are considering the position with the electrical industry supplying a small proportion only of the total domestic cooking load. We do not intend to go into any great detail, but we would give just a few more figures to lend a sense of perspective to the economic picture. Take the hotplate of a cooker. To have a boiling speed equivalent to the typical gas cooker with three burners, an electric hotplate would need a loading of 7,000 watts. In point of fact the hotplate loading of the normal type of electric cooker is only 4,000 watts—*i.e.*, 4 kilowatts.

P E P suggests that 3,600,000 electric cookers may be demanded in the 10 years after the war. This implies for the use of the hotplate alone a loading of 14,400,000 kilowatts. Of course, the diversity factor enters into the matter. It is unlikely that 3,600,000 domestic consumers would switch on the capacity of their electric hotplates simultaneously. But the total capacity of the two electrical generating schemes we have mentioned—the one coal-fired, the other water power—is only 5,100,000 kilowatts. And the water heaters? And the fires?—P E P talks of a requirement of about 10,000,000 space heaters divided between gas and electricity!

We will conclude this note on the P E P report by two quotations. The first from an article by an Electrical Correspondent in *The Times Trade and Engineering* for last month: In the consumption of electricity in the non-industrial field "the overall rate of charging has been such as to encourage the use of the supply for as many purposes as possible without particular consideration of the effect of these uses on the overall cost of production. It is only recently that offering supplies so restricted that they cannot increase the maximum demand on the source has become possible, through the development of reliable methods of making the restriction. It seems likely, in the period following the war, that not only will the possibility of giving restricted supplies be exploited, but also that the economic effect of the extended use of unrestricted supplies, now offered at low rates, will have to be carefully considered anew." The second from an electrical contemporary: "The supply industry will never persuade housewives to have their breakfast and warm their rooms before the factories start up, or wait until the industrial peak is over before doing these things. . . . It seems that only by increasing the amount of marginal plant can the difficulty be overcome. But this is uneconomical."

NEW ADVERTISING SIGNATURE

NO longer are Gas Industry advertisements to bear the imprint of the British Commercial Gas Association. This is one of the immediate results of reorganization at Headquarters; it is a logical and natural step following the merging into one body of the executive committees of the N.G.C. and the B.C.G.A. After 34 years the advertising work of the Association dissolves in the composite solution of the British Gas Council, from which it is re-crystallized and is re-christened B.G.C.—a more fitting signature identifying the Gas Industry's unanimous voice, and certainly less clumsy with the omission of the "commercial" anachronism. Thirty-four years ago the B.C.G.A. crystals, original in form, marked in type and picture the first attempt of any industry to embark on co-operative advertising and publicity. Since 1911 many brilliant crystals bearing the letters B.C.G.A. have seen the light of day and have added lustre to the activities of an essential public service. It would be quite impossible to assess the effect of this initial enterprise and the value of its work throughout the years. If imitation be the sincerest form of flattery, the move has been followed by many other industries. Looking back, we see many very bright phases in B.C.G.A. advertising, imaginative, novel, and arresting; there were patches not so bright and effective. At the start of the war gas advertising as understood before 1939 ceased. After more than five years this essential part of Gas Industry activity is to be resumed anew over the signature of the British Gas Council. It is work which demands and should get unstinted backing, with half-measures, which defeat their object, cast aside. The British Gas Council is fortunate in that it starts its Gas Industry advertising with an Industry which recognizes the importance of activity in this direction, and is very differently attuned to the idea than it was thirty-four years ago. This change in attitude is important and all to the good. The practice of advertising, now a more highly specialized technique, has also undergone change; for effectiveness its demands are greater.

With the change in signature of Gas Industry advertising lies opportunity—the opportunity of translating the work to a plane commensurate not only with the present importance of the Industry but with its future possibilities.

Our editorial and our news columns lately have overflowed with illustrations of certain tendencies in the public mind which cry aloud for correction. Press advertising alone cannot effect the needful change, but in understanding hands it can do much. In the hearing of a member of the "JOURNAL" staff the question was recently asked by a member of the public, "Are *all* these new houses to have electric cookers, then?" Again in the hearing of a member of the "JOURNAL" staff a few days ago was the conclusion arrived at in a bus after much heated talk that the Gas Industry, having extracted gas and aspirin and all manner of other chemicals from coal, and the profits accompanying their sale, had the audacity to charge the poor consumer as much for coke as he had to pay for coal. "What a liberty!—and what coke!" It will be for B.G.C. advertising to play a big part in altering such false impressions.

GAS LIGHT AND COKE

THE issue of the accounts and the General Meeting of this Company have always been of more than domestic interest to the Industry. Not only is the Gas Light the largest gas undertaking in the world, but its stocks have long been one of the most popular and widely held investments among all income grades of the community, having an almost gilt-edged flavour right down to the "ordinaries." In view of all that has happened since the Company was last able to present a full account of its operations, the 238th ordinary general meeting last Thursday was, therefore, of even more than ordinary interest. In the first place the accounts appeared in a revised form. It has long been felt that although public utility companies give more detailed information than most industrial companies, the actual form of presentation by gas companies

has lagged behind current ideas. A panel of London gas company accountants has been investigating, among other things, the question of uniform presentation of accounts and statistics and has issued a unanimous report. Feeling that the recommendation constituted a major step forward, the Directors decided to adopt the recommended form of accounts which, it is suggested, may sooner or later be taken by the Ministry of Fuel and Power as the basis for a compulsory standard. A number of undertakings in the London region are adopting the new form, although some others have not yet seen fit to do so. There is no need here to go into the details of the accounts, except to note that full dividends are being paid on the Preference Stocks and a dividend of 5% on the Ordinary Stock—the maximum that the Company can pay while the published price of gas in the central area exceeds the basic price of 11d. per therm. Recognizing that the price of gas must be as low as economically possible the Directors have reviewed the results of the past year, and in the light of present tendencies estimated what their revenue and their commitments are likely to be in the immediate future. Were it not that, while the war still goes on, it would be imprudent to ignore the risk of further setbacks, they would now be in a position to reduce the price of gas. Stockholders are assured, however, that after the cessation of fighting in Europe a scheme for the readjustment of charges, which will mean a general reduction, will be quickly brought into operation.

The Company suffered severely during the air attacks on London in 1940. Practically all its works sustained some damage, holders were destroyed, and many mains were broken, but gas supply was maintained except in some parts where waterlogged mains interrupted the supply for short periods. Apart from damage to its own works, plant, and mains, the Company sustained a serious drop in its receipts as the result of general bomb damage and the evacuation of large numbers of the population of the Metropolis, the average output being reduced by something like 17%. While expenditure had to be maintained, gas revenue decreased to such an extent that the Company was unable to pay any dividends for the second half of 1940 and the whole of 1941, and could only pay on the Debenture Stock by incurring a deficit. To a body of stockholders numbering many thousands and representing all sections of the community, such a state of affairs was extremely disappointing; to thousands at the lower end of the income scale it was little short of disastrous. The Directors were fully conscious of the effects of the position, and felt very much aggrieved because they had been led to expect, from statements made by the Chancellor of the Exchequer in the House of Commons, that the Treasury would be prepared to pay a subsidy to public utilities who were suffering from the blitz. They ultimately refused to do so, nor would they allow the Company to put up the price of gas to meet the deficit caused by the loss of business, and the number of men standing by, employed for the safety of London, and the additional cost of coal. This hit the Company very hard, but at last, though not until March, 1942, it received permission to raise the price of gas.

Gradually the financial position improved; Preference dividends were resumed in full at the end of 1942 and the dividends on the Ordinary and Maximum Stocks for the year were 1% and 1¼% respectively. For 1943, 4% was paid on the Ordinary Stock and the full 3½% on the Maximum Stock. Since August, 1939, the price charged for gas has been increased in three stages, from 9.75d. to 12.25d. per therm in November, 1939, to 13.75d. in March, 1942, and 14d. in August of the same year. Since that time, notwithstanding further increases in labour costs, coal, and many other commodities required in carrying out its business, the Company has been able to keep the price steady. The total rise of 44% in the price of gas certainly compares favourably with a rise of 100% in the price of coal.

Altogether the state of affairs disclosed by the report and accounts is encouraging. It must have been a keen disappointment to Sir David Milne-Watson, who, through the trying years of war, had been precluded by censorship regulations from making more than a bare statement, that indisposition should have compelled him on this almost historic occasion to hand over his speech to the Deputy-Governor, Mr. Henry Woodall. But to his satisfaction with the improved position of the Company will be added the gratification of receiving an unusually hearty expression of thanks from the meeting for his wise counsel and guidance, which has inspired everybody in the Company to give of their best for the benefit of the Company and consumers alike.

Personal

Mr. CLARENCE HARRIS is shortly retiring from the position of Managing Director of the Taunton and District Gas Company but will, as a Director, continue to give the Undertaking the benefit of his long experience and advice. He went to Taunton in 1919, since when, under his management, the annual output of gas has increased from 120 to nearly 500 million cu.ft. Many innovations were introduced by him, including the first "Dri-gas" plant, in connexion with which he did much pioneer work. We understand it is the intention of Mr. Harris to continue to reside near Taunton, where he has many local interests.

* * *

Consequent on the death of Mr. George Keith, reported in our last issue, the Directors of Keith Blackman, Ltd., have elected Mr. M. BURNINGHAM to be Chairman and Managing Director; Mr. A. L. AYTON, F.C.I.S., to be Secretary to fill the vacancy thus caused; and have appointed Mr. E. E. TAVENER to be the Company's Industrial Gas Engineer.

Obituary

Mr. JOSEPH GAUNT, who until his retirement in 1941 was Engineer and Manager of the Aberystwyth Gas Company, died on March 12 after a short illness.

* * *

The death has occurred of Mr. WILLIAM BATT, Chief Distribution Engineer to the Newcastle-upon-Tyne and Gateshead Gas Company, at the age of 60. He had occupied this post since 1925. Mr. Batt served his apprenticeship with the Newcastle and Gateshead Company, then went to Birmingham, where he became Assistant Distribution Superintendent to the Gas Department. After some time he returned to Newcastle.

* * *

The death occurred on March 12 of Mr. RALPH WILKINS, who was a Director of Victor Blagden & Co., Ltd., since its inception and was largely instrumental in the development of the Company's activities.

Need for Research on Coal

Addressing the Fuel Luncheon Club in London last week Mr. Robert Foot, Chairman of the Mining Association, said that the production side of the coal industry was an outstanding problem. Coal output was still showing a tendency to go down, and so costs had necessarily risen.

"We have to get enough coal," he continued, "and at a sufficiently low price, to enable us to take our place again as one of the great exporting countries. If we find we can maintain our exports by finished products, instead of by exporting raw coal, that will be all to the good, but we must not neglect doing everything we possibly can to get our export trade back again.

"We must do everything we can as consumers in every direction to see that coal is used with economy and efficiency. By this means we can increase the real value of coal. That is a great national contribution that can be made by everybody. I attach the greatest importance to it."

The next 10 years would be a vital period for the coal industry, and it was not too short a period to take for the reconstruction of the country as a whole. The sooner they made a beginning the better for the country. Nobody could say that our present knowledge in regard to coal, and how it could be used and developed, was as complete as it ought to be.

Gas Industry Advertising

With the merging of the National Gas Council and the British Commercial Gas Association in the British Gas Council, future advertising of the Gas Industry will be carried out by the Council and will bear its imprint.

Two agents are handling the Industry's advertising campaigns for the years 1945–46, which starts in April. Saward, Baker & Co., Ltd., are responsible for an extensive campaign in the national and district newspapers and popular magazines, while the London Press Exchange will be conducting a campaign in some 85 trade and technical media, the architectural Press, and other professional journals.

Smaller Municipal Gas Undertakings

The Annual Meeting of the Association of Smaller Municipal Gas Undertakings was held in Birmingham on March 7. Councillor F. J. Harrison (Newcastle, Staffs), Chairman of the Association, presided.

The report, which was approved, stated that two general meetings had been held since the formation of the Association in September, 1943, and at one of these a report was considered and approved setting out the views of the Association on the British Gas Federation's Post-War Planning Report. On the setting up of the Heyworth Committee a second report (Aug. 24, 1944), amplifying the views of the Association, was considered, amended, and approved at the second general meeting. These reports, it was pointed out, unlike those presented by other bodies concerned, were submitted to and approved by the whole of the members (being authorized gas undertakings) in general meeting. Opportunity had been taken by the officials in attendance at meetings of district gas organizations to combat views expressed which were regarded as opposed to the interests of the smaller undertakings. The Committee had met regularly to prepare the reports, and had continued to meet and to examine further evidence likely to be useful for submission to the Heyworth Committee if invited. The Secretary of the Heyworth Committee had advised the Association that it was not desired that evidence should be tendered by counsel or by specially engaged experts, so that for the present the funds of the Association would be maintained. The Committee were taking steps to ensure that on representative occasions members' views were expressed, and that the identity and individuality of the smaller undertakings would not be lost. It was anticipated that following on the proceedings of the Heyworth Committee there would be need for increased activity of the Association. For the work of the Association to have increased and permanent effect it was desirable that all municipal gas undertakings, qualified under the rules, should join the Association.

Councillor Harrison was re-elected Chairman.

Mr. F. G. Shaw (Buxton), who was reappointed Vice-Chairman, spoke of the active and inspiring spirit which the Chairman had always brought to the affairs of the Association. An effort was being made to preserve the right of a local authority to do its work without interference.

Mr. F. L. Wimhurst (Newcastle, Staffs) was re-elected Secretary.

The Committee was appointed as follows: Councillor G. Sheppard (Devizes), Mr. E. C. Heal (Wallingford), Councillor C. H. Langham (Mansfield), Mr. C. E. Smith (Brigg), Councillor S. Hill (Tipton), Mr. O. S. Brettle (Sedgley), Councillor T. G. Gale (Abertillery), Mr. O. P. Cronshaw (Rhyl), Councillor J. Robinson (Morecambe), Mr. W. T. Hainsworth (Newton-le-Willows), Councillor J. W. Minnikin (Bingley), Mr. J. H. Clegg (Colne Valley), Mr. J. McT. Mulholland (Selby), Mr. H. Maycock (Abertillery), Mr. C. E. Dickinson (Widnes), and Mr. E. Yates (Darwen).

The subscription for the year was fixed at £3 3s.

Tax Burdens on Engineering

Lord Davidson, President of the Engineering Industries Association, addressing the Wales Region of the Association at Cardiff on March 14 said: The transition from war to peace is much more difficult for engineering firms than for industry in general. A longer period of preparation is necessary. In many cases it has to find new products, new methods, and new tools. During the war engineering industries have expanded much more rapidly than most other industries. The process of transition is correspondingly more difficult.

Many engineering firms have spent all their resources in expanding war production. They have been penalized by an unfair system of taxation which has restricted profits by reference to a standard measured by pre-war years when the engineering industries were going through a difficult time. The picture, therefore, is one not of excess wartime profits, but rather of an industry which has been making very small profits after taxation, and which has had to spend more than its profits on essential developments for war production.

The costs of the transitional period are likely to be high in the engineering industry. The E.I.A. has instituted an inquiry on this point. More than half the firms estimate that their current resources (including E.P.T. credits) will be insufficient to meet transitional costs The results on employment are serious. About a third of the firms concerned estimated that they would increase their personnel, and two-thirds anticipated a major decrease. The net figure showed a decline of employment of about 16%. The E.I.A. has submitted these figures to the Chancellor of the Exchequer. They know conclusively that an unfair system of taxation has gone far to jeopardizing the powers of the engineering industry to give full employment after the war, and to supply the home and export markets with essential products.

We are alarmed at the prospect of the indefinite extension of raw material controls, price restrictions, export licences, and all the paraphernalia which chokes enterprise and restricts output. It is important that the small firm should not be artificially handicapped. The small firm in engineering has always and should always play its special part in providing scope for new inventions and new techniques.

The question of taxation is fundamental. The Income Tax Bill which has recently been introduced in the House of Commons goes some way to meet the needs of industry, but it does not go far enough; for all that it does in most cases is to spread the burden of taxation in a different way, so that wear and tear allowances are given in the early years after purchase, rather than when the plant is old. Something much more fundamental is needed if industry is to be allowed to plough back sufficient profits to enable it to keep up to date and produce efficiently. Profits retained in a business should be taxed at a much lower rate than profits distributed. Much more care should be taken to ensure that taxable profits are the same as profits computed on a commercial basis.

Preparing for Peacetime Production

The following are among the Government factories which, the President of the Board of Trade announced last Monday, have already been allocated to peacetime production: Parkinson Stove Company, Ltd. (Oldham), for the production of gas appliances; Wilson & Mathieson, Ltd. (Armley), gas stoves; C. Corner & Co., Ltd., (Workington), gas stoves.

Diary

Mar. 22.—Midland Counties Coke Association: Annual Meeting, King Edward House, Birmingham, 2.30 p.m.

Mar. 23.—London and Southern District Junior Gas Association: Gas Industry House, 6.30 p.m.

Mar. 24.—Manchester and District Junior Gas Association: Rochdale Gas-Works, 2.15 p.m.

Mar. 24.—Yorkshire Junior Gas Association: Short Paper Meeting, Leeds University, 2.30 p.m.

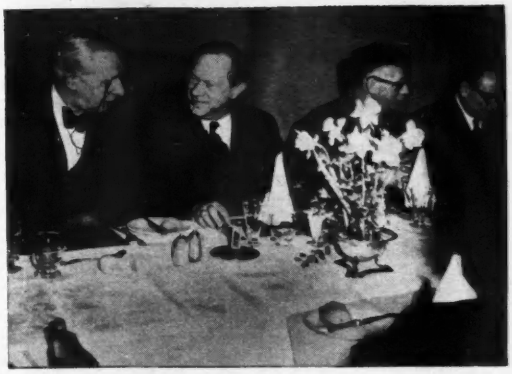
Mar. 28.—Institution of Heating and Ventilating Engineers: Meeting at Institution of Mechanical Engineers, Storey's Gate, S.W. 1, 6 p.m. Paper by A. C. F. Mackadam and Dr. A. M. J. Janser on "Specific Effect of Infra-Red."

April 12.—Industrial Gas Centres Committee: Newcastle-upon-Tyne and Gateshead Gas Company's Offices, 10 a.m.

April 13.—Institution of Chemical Engineers: Annual Meeting, 11 a.m.; Luncheon, 1 p.m.; Connaught Rooms, W.C. 2.

Conspiracy and Protection of Property Act, 1875.—We shall shortly be printing a new run of copies of Section 4, which for many years we have supplied for posting at gas-works, and we shall be glad to hear in advance from any undertakings which may be requiring copies. On card, 12 by 10 in., 1s. post free.

In Our Report of the meeting of the North-Western Section of the Institute of Fuel held on Feb. 28 ("JOURNAL" of March 7, p. 307). Dr. M. Barash was described as being with his former firm—Messrs. West's Gas Improvement Company, Ltd. Actually Dr. Barash resigned from the firm a year ago to engage on work as a Consultant in a private capacity—which work he has for some time carried out in conjunction with his duties with the Ministry of Fuel and Power.



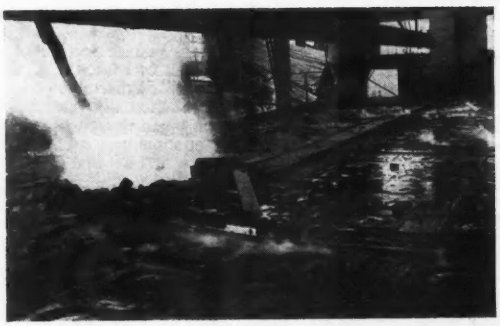
As recorded in the "JOURNAL" last week, at the invitation of the Gas Light and Coke Company, leading architects, master builders, and heating and ventilating engineers inspected the Kitchen Planning Exhibition at Dorland Hall this month. Our photograph shows Mr. Grey Wornum, F.R.I.B.A., Mr. A. E. Sylvester (Chairman of the British Gas Council, Managing Director of the Gas Light and Coke Company), Dr. Oscar Faber (President of the Institution of Heating and Ventilating Engineers), and Mr. F. M. Birks (Chief Engineer of the Gas Light and Coke Company).

Southampton Gas-Works in the Air Raids

Details of the serious damage done to the property of the Southampton Gaslight and Coke Company by enemy action in 1940 and 1941 were given at the Annual Meeting of the Company, a report of which appears on p. 374. Our photographs give an idea of the state of the works after a concentrated attack in the September of 1940.

Carburetted Water Gas Plant and Waste Heat Boiler.

Carburetted Water Gas House.



Intermittent Vertical Chamber Setting.

Power House.

Coke Screening Plant.

Another view of the Intermittent Vertical Chamber Setting after the raid.

Electrostatic Tar Precipitation*

Plant at St. Helens Gas-Works

IT is now generally accepted that tar contents of coal gas in excess of 2 grains per 100 cu.ft. will cause such troubles as the fouling of ammonia scrubbers and purifier boxes, each of these difficulties causing its own local repercussions. The true criterion of a tar extractor's usefulness, therefore, is its ability to remove tar fog down to a maximum concentration of 2 grains per 100 cu.ft. irrespective of its efficiency on a percentage tar removal basis.

It is also known that a substantial fraction of the tar fog particles in coal gas are less than 10 microns (0.010 mm.) in diameter, and this fraction may contain particles as small as 1 micron. The total of these small particles, most of which cannot be separated efficiently by mechanical means, will probably exceed the above concentration limit. The electrostatic precipitator provides a solution to this problem, since its operation is essentially independent of particle size. Its ability to precipitate dust particles of less than 1 micron diameter has been established, and there is good reason, therefore, to believe that it will handle tar particles of similar size. Furthermore, there is now abundant practical evidence of the effectiveness of the electrostatic precipitator in mitigating the tar fog nuisance in many gas-works and coke oven plants in this country and abroad.

The first electrostatic precipitators installed on the commercial scale in this country were put into operation in 1918 for sulphuric acid mist precipitation at the Queensferry Ordnance Factory. By 1926 several installations had been made in Great Britain for cleaning blast furnace gas, for removing acid mist, pyrites dust, &c., in the manufacture of sulphuric acid and for the recovery of valuable flue dust from metal-smelting and alumina-calcining furnaces. About this time the first English installation of an electrostatic tar precipitator was made at Hinckley Gas-Works. The high tension current was provided, as in earlier installations for dust precipitation, through a rotary rectifier.

The year 1929 saw the introduction to British electrical tar precipitation of the first static metal rectifier having no moving parts. Simon-Carves, Ltd., and Ferranti Ltd. were jointly responsible for this innovation, and the original equipments are still in satisfactory operation. During this year Simon-Carves, Ltd., erected and commissioned the first British electrostatic tar precipitators to be installed on a coke oven battery at Billingham, and also on a low-temperature carbonization plant at Askern. Two years later the same firm installed the first tar precipitator on producer gas in this country at Huddersfield, and on carburetted water gas at the Southall Works of the Gas Light & Coke Company.

Fundamentals of the Process

In a gas, external electrical influences always cause partial ionization, and the small number of free ions existing from this cause can be attracted or repelled in an electric field. As these ions are made to move rapidly in such a field, they collide with uncharged molecules, splitting these into more charged ions. This process is cumulative, so that ultimately the gas attains a highly ionized state. When liquid or solid particles are present in the ionized gas, many of the gaseous ions attach themselves to these particles, so charging them. This effect is essentially independent of particle size, and the charged particles are displaced through the gas by the electric field. A unidirectional field is essential for the precipitation of particles from a gas, and early research showed that efficiency was higher with a high potential negative field.

In the wire and tube or wire and plate electrode system, the wire is kept charged to a high negative potential and forms the discharge electrode. The wire hangs centrally through the tube, which is earthed and forms the collecting electrode. In the plate type of precipitator, the plates form the collecting electrodes and the wires are spaced evenly between them.

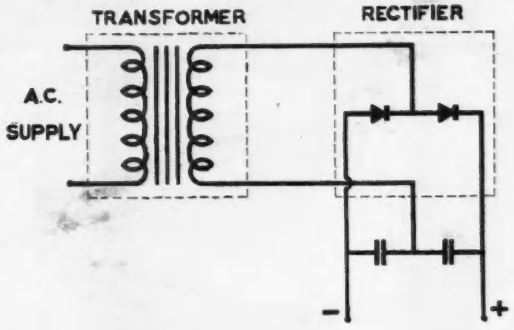
The small radius of curvature of the wire electrode causes the formation of a concentrated field, and consequent intense ionization of the gas in the vicinity. The dirty gas is usually led into the bottom of the vertical tubes or between the plates at their lower ends, the gas being cleaned as it rises. The intense electric field used gives rise to the steady "corona" or glow discharge, which is accompanied by a slight hissing noise; this type of discharge occurs at 20,000 to 30,000 volts.

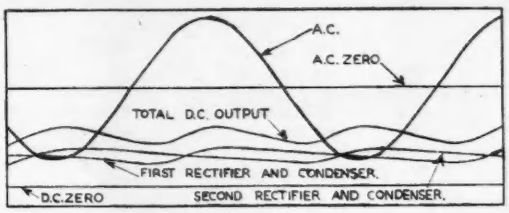
Static Metal Rectifiers

The diagram opposite indicates the electrical equipment layout of the precipitator set, using Simon-Carves' static electrical equipment. The circuit, as will be seen, consists of two half-wave rectifiers each in series with a condenser, and each operating on opposite half cycles.

During the half cycle in which one rectifier operates, the condenser in series with it becomes charged. Hence, during the next half cycle when the other rectifier allows the current to pass, the charge in this condenser becomes in series with the rectified voltage. Thus an output voltage is obtained greater than the input voltage. During this half cycle, the other condenser is being charged so that on each half cycle the rectified voltage is in series with the charge in the condensers. Reference to the oscillogram will make the operation clear, when it is realized that the presence of the condensers also causes a certain amount of smoothing to take place.

The rectifiers normally used are of the copper oxide or selenium types. Current flows readily from cuprous oxide to copper and from iron to selenium, but only with great difficulty in the opposite directions. A rectifier unit consists of a large number of copper-cuprous oxide or iron-selenium discs held together under considerable pressure. Heat produced in the assembly when in operation is dissipated through radiating fins and the whole unit is immersed in oil to ensure insulation and assist cooling. While the static rectifier system is subject to electrical losses, the output voltage is sufficiently smooth for high efficiency precipitation, the absence of moving parts saves maintenance costs, and the reliability of the equipment renders a spare set unnecessary. The power consumption is about 8 KWH per million cu.ft. of gas cleaned. The equipment is silent in operation and does not cause any wireless interference.





Valve Rectifier

In place of the metallic rectifiers, thermionic valve rectifiers may be used. The valve consists essentially of a heated tungsten filament coated with a substance which will emit electrons and a metal anode which receives these electrons. The assembly is mounted in a highly evacuated glass or steel vessel. Current can only flow from the anode to the filament as the cold anode does not emit electrons; the rectifying action of the valve operates on this principle. In practice, the valve rectifier layout is complicated by the need for a special transformer for filament heating, and many sensitive relays are required. This type of rectifier has been used for precipitator sets in America, but has not been favoured in this country owing to the short life of the costly valves and their relatively low efficiency.

Safety devices must be fitted, by law, to all high tension equipments to switch off and earth the apparatus before access can be obtained. Screening of all the high tension parts of the equipment is also essential.

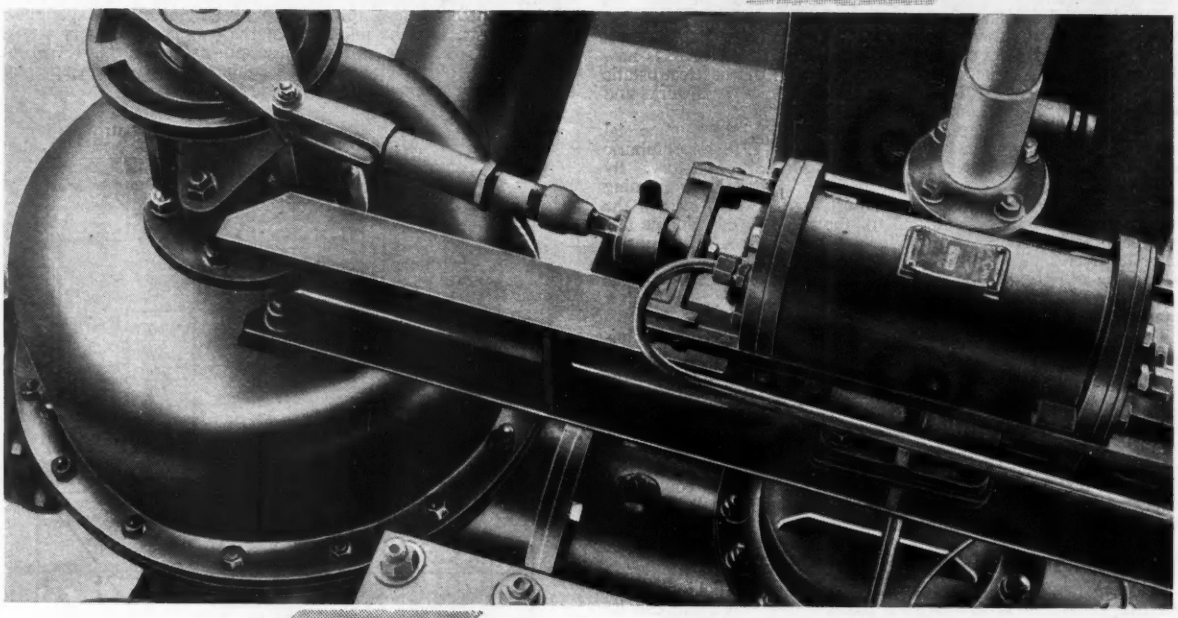
The Simon-Carves Tar Precipitators at St. Helens

Treaters.—Each treater has a capacity of 4,000,000 N.T.P. cu.ft. per day of clean gas, the actual working conditions being 70° F. and 24 in. w.g. pressure. The two vessels are of identical design.

The mild steel cylindrical vessel contains in its middle section a number of 6-in. bore steel tubes 11 ft. long, which form the collecting electrodes. The tubes are expanded into one top tube plate only, their lower ends being spaced by spot-welded flats, so that the tubes are kept vertical. The lower ends of the tubes are slightly belled to avoid arcing between collected tar droplets and the discharge electrodes. The gas enters the vessel just below the tube plate and is evenly distributed over the vessel section as it passes downwards to enter the tubes. As the gas travels up the tubes—its velocity is approximately 5 ft. per second—the tar fog is precipitated, the tar draining from the

* From a Brochure prepared by Messrs. Simon-Carves, Ltd., on the occasion of a recent visit of the Manchester and District Junior Gas Association to the St. Helens Gas-Works.

BENZOLE RECOVERY by ACTIVATED CARBON



(Patents applied for)

FOR HIGHER BENZOLE YIELD AND GREATER SULPHUR EXTRACTION

GAS CHANGEOVER VALVE AND OPERATING MECHANISM

ONE OF THE SALIENT FEATURES OF THE NC PLANT

NEWTON CHAMBERS

NEWTON CHAMBERS & CO LTD THORNCLIFFE NR SHEFFIELD

tubes into the bottom section of the vessel, whence it is led away through an external seal pot.

The top section of the precipitator carries two external steel boxes, each containing a high tension insulator. From a beam supported on these two insulators the discharge electrode system is suspended. The discharge electrodes are attached to a light channel and angle framework suspended by steel tubes from the beam mentioned above. Each electrode hangs centrally in its tube, and is held taut by a cast-iron weight attached to an eyebolt at its lower end. A grid of light steel flats holds all the lower ends of the electrodes centrally in their tubes.

The discharge electrodes consist of fluted special iron wires, at the sharp edges of which a very high concentration of charge is achieved, so that intense ionization occurs in their vicinity. This type of electrode produces a field of similar intensity to that surrounding a fine wire, but the heavier fluted wire has superior mechanical strength. A conductor enclosed in ducting carries the high tension current from the electrical equipment, through an H.T. air-break switch to either or both treaters, the conductor passing through one insulator of each treater. The H.T. switch is mounted in a screened compartment above the transformer house. The treater insulators are enclosed, as far as possible, in light steel casings to avoid condensation and deposition of tar on them when the treater is being started up. Steam heating coils are also fitted in the insulator boxes to keep the insulators dry and so prevent breakdown. The treater is provided with manholes giving access to the insulators and electrodes. The manhole covers are padlocked as a safety precaution.

Electrical Equipment.—A single static electrical equipment is provided of adequate capacity to operate both treaters.

A 400 volt 50 cycle single phase A.C. supply is brought to the main fuse and double pole switch on the control panel. From this the current passes *via* a moving coil voltage regulator controlled by the handwheel on the panel, through the low tension ammeter to a circuit breaker. The voltage at the regulator output is indicated by the low tension voltmeter. The low tension voltage regulator controls the high tension voltage applied to the treater. From the circuit breaker, connexion is made to the primary winding of the step-up transformer. The transformer, which is oil-immersed and self-cooling, gives a high tension output at such a voltage as will provide a potential of 30,000 volts at the treater with the highest voltage regulator setting. The voltage regulator allows variation of this potential between 15,000 and 30,000 volts. The high tension alternating current passes to the copper oxide rectifiers which are assembled with their smoothing condensers in the " voltage doubler " circuit already described. The rectifier unit is oil-immersed in a steel tank.

Typical performance data of the installation are tabulated:

	No. 1 treater.	No. 2 treater.
Gas rate: cu.ft. per day at 60°F. and 30 in. w.g.	2,640,000	1,788,000
Gas temperature: °F Inlet	65	64
Outlet	63	63
Tar in raw gas: grains/100 cu.ft. at 60°F. and 30 in. w.g.	90	134.5
Tar in clean gas: grains/100 cu.ft. at 60°F. and 30 in. w.g.	0.34	0.45
Cleaning efficiency: %	99.6	99.6
Mean primary volts	249	
,, ,, amps.	5.9	
,, treater milliamps.	33.4	
,, kilowatts	1.52	
KWH per million cu.ft. gas at 60°F. and 30 in. w.g.	8.2	

COMPARISON OF DISTILLATION RANGE OF CRUDE TAR FROM THE WELL AND TAR FROM THE ELECTROSTATIC DETARRER.

SAMPLES TAKEN 12/9/40.

Distillation range °C.	Crude tar Sp.gr. 1.085 water at 60°F. 3.5%. %	Tar from detarrer Sp.gr. 1.046 dehydrated at 60°F. %
100	—	—
110	—	—
120	—	—
130	3.5	2.5
140	—	3.5
150	—	4.8
160	—	6.5
170	4.5	8.5
180	5.0	10.5
190	6.5	15.5
200	8.0	20.5
210	11.0	24.5
220	17.5	28.9
230	20.5	32.5
240	24.0	37.5
250	26.0	42.7
260	27.5	45.5
270	30.0	47.0
280	32.5	48.5
290	35.0	51.0
300	36.0	52.5
310	38.0	55.0
320	40.0	57.0
330	43.0	59.5
340	46.5	61.5
350	49.5	64.5
360	54.5	67.5
Pitch by difference (by volume)	45.5	32.5

The positive terminal of the rectifier unit is connected to earth, and it is possible to divert this connexion through the H.T. milliammeter to indicate the flow of current through the treater. The negative terminal of the rectifier unit is connected directly to the treater as described above. Subsidiary circuits are arranged to operate a green lamp when the set is in normal operation, and to operate a red lamp and a Klaxon alarm (the latter installed in the exhauster house) when the set trips out. All the above equipment is installed in a screened compartment, the access gate in the screen being fitted with safety devices which trip out the set when the lock is opened and earth all the H.T. equipment when the gate is opened a few inches. The screen gate of the H.T. switch compartment above the transformer house is fitted with similar safety devices. When work is being done on the treaters or electrical equipment, the key of either of the screen gate locks is removed, so that it is impossible to restart the set until the key is replaced and the gate locked.

Present-Day Simon-Carves Precipitation Equipment

Before passing to a consideration of the placing of an electrostatic precipitator in the gas stream and the advantages of the installation to the works equipment which follows it, some features of the most modern Sinon-Carves' apparatus will be briefly mentioned. A reduction of capital cost on precipitators up to 5 million daily cu.ft. capacity has been achieved without loss of cleaning efficiency by the use of the simple plate and wire type of treater. A lower gas velocity is employed to maintain the highest precipitation efficiency. For these smaller installations, simplified suspension of discharge electrodes from a single insulator has been found successful. Shock-proof electrical equipment, incorporating the very robust selenium rectifier, is now a standard fitting. The whole high tension equipment is contained in a single oil-filled vessel having a built-in control panel. This self-contained equipment avoids the need for a screened compartment, so that less ground space is required and the equipment may be placed anywhere. The voltage regulator is motor-operated and can be remote controlled if desired.

Situation of the Precipitator in the Gas Stream

The precipitator may be placed:

(*a*) Under suction in the gas main from the retorts before the primary condensers. Gas can be treated in a precipitator at 80°C. to remove the tar before it can contaminate the liquor brought down in the condensers. While this system is successful within itself, a second precipitator may be required on the cold gas to remove fog condensed from the lighter tar fractions which are volatile at 80°C. A larger hot gas precipitator is required than the corresponding cold gas vessel on account of the greater gas volume to be handled. Where piston exhausters or boosters are employed, the precipitator should preferably be placed on the suction side to prevent the formation of piston head and valve deposits of tar in these machines. Blade exhausters, however, are often run with tar lubrication, and where this is desired the precipitator must be placed on the delivery side of the exhauster.

(*b*) After blade exhausters before or after secondary condensers under 20–40 in. w.g. pressure. With this placing of the treater, all the tar fog condensing down to 70°F. is precipitated and the blade exhauster has tar lubrication. The two treaters at this works are placed after the blade exhausters and secondary condensers and operate under 24 in. w.g. pressure at 70°F. In this position the treater handles water mist as well as tar fog.

(*c*) On C.W.G. plant under pressure or suction. The choice of either of these positions depends upon the character of the gas and upon considerations similar to those mentioned for the main coal gas stream.

(*d*) On producer gas from bituminous coal at 2 in. w.g. and 80°C. In this application fractional removal of tar is necessary, and the viscous nature of the tar dictates the operation of the precipitator at 80°C. The lighter tar fractions are subsequently removed in a condenser.

Effects of Electrostatic Tar Removal on Subsequent Gas-Works Processes

On either direct or indirect ammonia recovery systems, the absence of tar deposits and blockages in saturators, brush or tower washers, and the production of tar-free sulphate crystals can be credited to an electrostatic tar precipitator. Where a treater is placed before the primary condensers, the additional advantage of a very low O/A figure of the ammonia still effluent is obtained. Carry-over of acid from saturators is considerably reduced.

The fouling of oxide beds with gas-borne tar is eliminated by electrostatic precipitation, but the general fouling of the oxide is very complex, and an increase in oxide life is not always apparent after the fitting of an electrostatic precipitator. Where the gas contains an appreciable quantity of oxygen, it has been found that oxides of nitrogen are formed in the corona discharge in the precipitator, and this leads to the formation of resinous bodies in the purifier bed. Where oxygen contents are not high enough for this to occur, there remains the normal fouling process which probably involves polymerization of gaseous unsaturated hydrocarbons or their condensation with sulphur to form tarry materials. Temperature and humidity are additional factors in the hardening of the oxide.

Similarly, in coke oven plant, the tar fouling of benzole scrubbers and ancillary plant is overcome by electrical precipitation. The thickening of benzole wash oil due to tar is also eliminated, but thicken-

ing continues at a reduced rate owing to complex reactions within the oil itself. The cleaner operation of boosters and exhausters, where these follow an electrostatic precipitator, represents a considerable saving of maintenance charges.

The tar is precipitated gently and, in the majority of cases, separation of water associated with the tar is simple. Under certain conditions of carbonization and gas quality, the precipitate may come down as an emulsion which will require warming to obtain separation. The greatest advantage of this precipitation system lies in its ability to remove tar fog more completely than any mechanical apparatus, and with very much less pressure drop in the treater itself and the plant following it. It is emphasized that in considering an economic choice between a mechanical and an electrical precipitator, the effect of each on the operating cost of the subsequent plant units must be taken into account as well as the capital and maintenance costs of the precipitator itself. A consideration of power required for driving the gas through the works equipment may be quoted as one item involved in the choice between precipitator types. The fouling of scrubbers and oxide beds following low efficiency mechanical precipitators throws considerable back pressure on the exhauster; the power consumed in overcoming the resistance in excess of that thrown by the clean plant can justly be credited to an electrostatic precipitator. Similarly, a substantial proportion of the cost of cleaning tar from plant units with mechanical precipitators can be placed on the credit side of the electrostatic precipitator account.

Comparing the two types of plant themselves, the P. & A. extractor and the Livesey washer (chosen as the usual mechanical types employed), both show an increasing pressure drop as they become due for cleaning. Frequent cleaning is necessary and involves considerable maintenance cost. The electrostatic precipitator throws an almost constant and negligible back pressure of the order of ½ in. W.G. Cleaning of the treater is very rarely necessary except for a routine cleaning of insulators, which need not involve more than 30 minutes' shut-down once in two or three months.

General maintenance cost on the static electrical equipment is extremely low. The power consumed in driving gas through the Livesey or P. & A. extractors is often greater than the very low total power requirement of the electrostatic equipment.

When all these direct and indirect factors have been included in an economical comparison of tar precipitation methods, it is found that the capital cost and depreciation of the electrical precipitators are more than offset by the savings effected over a period of years.

COMPANY MEETINGS.

Gas Light and Coke Company

The Ordinary General Meeting of the Gas Light and Coke Company was held on March 15 in London. Mr. HENRY WOODALL, Deputy Governor, presided in the absence through illness of the Governor, Sir David Milne-Watson, Bt., LL.D., D.L.

The Governor, in the course of his speech, which was read by Mr. Woodall, said: A panel of London gas company accountants was formed to investigate, amongst other things, the question of uniform presentation of gas company accounts and statistics and a unanimous report was issued.

Turning to the revenue account, compared with 1943 there has been an increase in revenue from gas of £689,000. The revenue from by-products was up by £212,000. On the other side of the revenue account the cost of manufacture of gas went up by £380,000, and was mainly due to the increased cost of wages and materials. The distribution of gas shows a decreased cost of £261,000, mainly due to a reduction of £229,000 in depreciation and renovation of meters and appliances. From the revenue account a balance of £3,864,000 is carried forward to the net revenue account.

After providing for taxation on the basis of profits for the year, a profit of £942,000 is left. The directors recommend the payment for the December half-year of the full dividends on the Preference and Maximum stocks and a dividend at the rate of 2½% on the Ordinary stock, making a total dividend of 5% for the year. £527,000 is carried forward to the credit of 1945 as against £370,000 last year.

In the balance-sheet the item hire purchase has now dropped to £60,000. You will realize that the capital laid out by the company on its appliance-selling campaigns before the war has nearly all been repaid. On the other side of the balance-sheet you will see that the provision for equalization, maintenance, renewals, &c., stands at £2,626,000. The reason for this relatively high figure is that the company has continued prudently to make provision for necessary maintenance and renewals of its plant, but has been unable to spend the money owing to the difficulty of getting the work done.

Price of Gas may Come Down

By good management the company has re-established its finances. We have reviewed the results of the past year, and were it not that the war still goes on (and while it does so it would be imprudent to ignore the risk of further setbacks) we should now be in a position to reduce the price of gas. After the cessation of fighting in Europe a scheme for the readjustment of our charges, which will mean a general reduction, will be quickly brought into operation.

The company suffered very severely during the air attacks on London in 1940. Practically all our works were damaged, gasholders were destroyed and many mains broken. The highest praise is due to the courage, resourcefulness and tenacity displayed by the staff. A large number of people left London and our consumption fell by about 17%, while expenditure was necessarily high. We were unable to pay dividends for the second half of 1940 and the whole of 1941 and incurred a deficit in paying Debenture interest. At the beginning of the war the price of gas stood at 9.75d. per therm, but the company was forced to raise the price by 2½d. per therm in November, 1939. It was not until March, 1942, that the Government authorized us to charge an additional 1½d. per therm. In August of the same year we were again forced, by increases in the price of coal, to make a further increase of ½d. per therm. The price of gas has been increased by 44%, whereas the pit price of coal has risen by 100%.

The report was adopted.

Southampton Gas Company

The Annual Meeting of the Southampton Gaslight and Coke Company was held at the Company's offices, Southampton, on Feb. 20, Brigadier E. M. JACK (the Chairman) presiding.

The CHAIRMAN, in moving the adoption of the report and accounts, said the Company's finances were in a strong and satisfactory position. Consumption of gas had risen, despite the need for fuel economy, and had now overtaken the previous highest figure, namely that for 1939. The consumption for 1944 was over 2,438 million cu.ft., showing an increase of 7% over the 1939 figure. Owing to the serious damage to the works and mains in 1940 and 1941, and to the evacuation of a large number of consumers, the sale of gas was substantially reduced. Sales for the six months ended March, 1941, showed a decrease of no less than 60% compared with the corresponding figure for the previous year.

To meet the growing demand for gas a tender had been accepted for a substantial addition to the manufacturing plant, in the form of another installation of static vertical retorts, giving a daily output of 2,046,000 cu.ft. The necessary Government permits had been obtained, but it would be some considerable time before the installation could be completed. Consumption figures tended to show that consumers generally were not practising the economy called for by the Ministry of Fuel and Power. Shortage of coal and labour had made it extremely difficult to maintain an adequate supply of gas, and he emphasized the necessity for the most stringent economy in the use of fuel of every description.

Mr. T. CARMICHAEL (Deputy-Chairman), in seconding the resolution, drew attention to the fact that despite large increases in the cost of coal and oil, certain reductions had been made in the scale of charges for gas. These, together with the lower differential prices, represented a saving to the consumers of over £60,000 per annum. Mr. Carmichael also referred to the unfairness of a number of local authorities in using their powers to prevent the installation of gas cookers in temporary houses, and said that to refuse the consumer freedom of choice could not be justified on any grounds whatsoever.

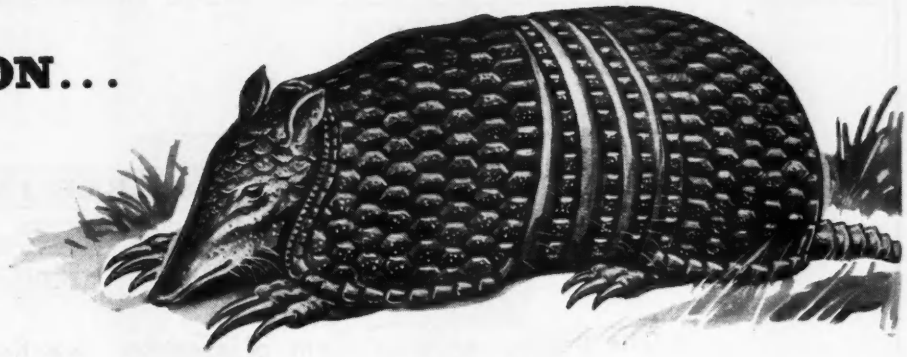
Dividends as already announced were declared, and on the motion of Mr. S. E. WHITEHEAD (Managing Director) a hearty vote of thanks was accorded to the Company's officials, staff, and employees, who were referred to as a splendid team. Mr. H. RUNHAM (Secretary) and Mr. G. NEIL (Engineer) responded.

Raid Damage Reviewed

The Chairman gave an account of the serious damage sustained by the Company by enemy action in 1940 and 1941. On the afternoon of Sept. 26, 1940, a concentrated air attack was made on the Northam Works, and of 50 bombs that fell in the area 27 were dropped on ten acres of the Company's works and property. The bombs were of heavy calibre and caused 28 casualties among the employees, 11 of which proved fatal. Two of the Company's air-raid shelters received direct hits, and it was in these shelters that the bulk of the casualties occurred. The intermittent vertical chamber plant, responsible for about 30% of their gas output, was wrecked and set on fire. Part of a horizontal retort house and an adjoining coal store were badly damaged. The carburetted water gas plant was put out of action; two large generators were riddled with splinters; the roof, the stage floor and operating gear were destroyed, and the blower and exhauster house were wrecked.

(*Continued on p.* 379)

PROTECTION...



In common with the modern Gas Meter, the Armadillo may be said to consist of a delicate internal mechanism enclosed in an outer covering of protective plates. But whereas the Armadillo's outer covering is *his* protection, the inner workings of the gas meter constitute *your* protection and that of the consumer.

***your protection is the* A&M METER**

ALDER & MACKAY LTD., NEW GRANGE WORKS, EDINBURGH, 11

AT GAS WORKS IN THE MIDLANDS.

PURIFIER INSTALLATIONS Complete in Every Detail

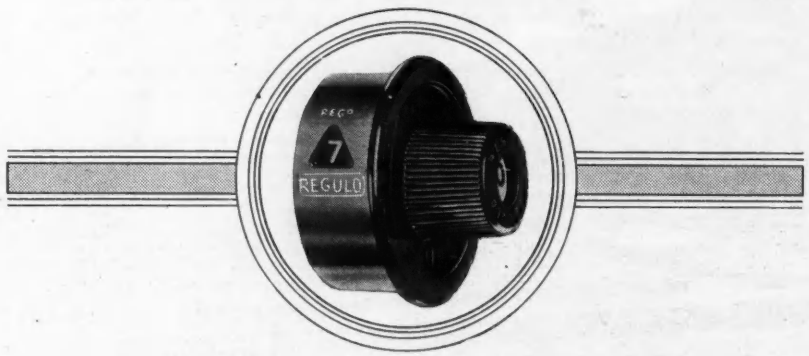
C. & W. WALKER, LTD., Donnington, Nr. Wellington, Shrops.

LONDON OFFICE - Temporary Address DONNINGTON, WELLINGTON, SHROPSHIRE.

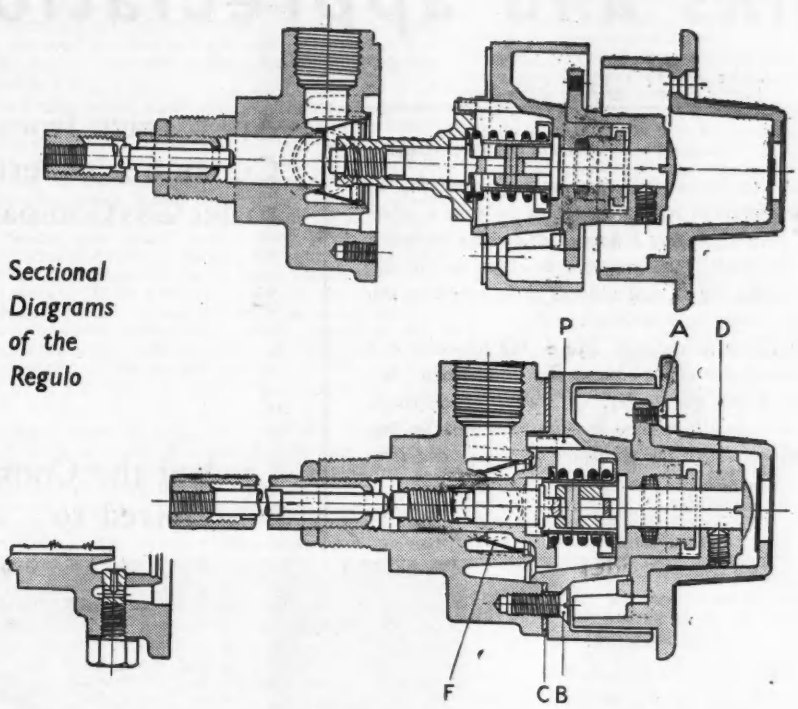
THE REGULO....CLEANABLE IN SITU

The Regulo, an instrument of precision, was first supplied with the New World Cooker in 1923, thus introducing automatic cooking in this country. Such changes as have been made in the Regulo since that date affect the form and not the principle of the design. The most important modification was made in 1938 when the cleanable model was introduced. Maintenance is now very simple, as both the valve and the seating can be cleaned *in situ* without disturbing the setting of the instrument.

It is no longer necessary to disconnect the thermostat and return it to the makers' works for cleaning—an advantage of great importance to the Gas Industry.



Sectional Diagrams of the Regulo



The head is secured to the body by three screws (B), through flanged joints made gastight with a gasket (C). The dial spider (D), to which the dial itself is screwed, is permanently secured to the dial spindle during the setting operation. The valve is guided by a peg (P) attached to the removable portion of the head, while the valve spindle and dial spindle are joined by a permanent slotted link movement. Since the dial, when once set, cannot move more than one revolution because of a stop, the relative position of spindle and valve, upon which depends the setting, are invariable so long as the dial spider is secured to the spindle.

To obtain access to the valve and its seating for cleaning, remove the three screws (A), take off the dial, and remove the three screws (B). The body and visor portions will readily separate under the pressure of the valve spring. Although the valve can slide along its guide (P), it still cannot turn more than one revolution.

The valve and its seating may then be easily cleaned. The opportunity should also be taken of removing carefully the fine gauze filter (F) (which protects the valve seating), and cleaning it, and also the by-pass screw, although the latter may be removed for cleaning independently if required.

Re-assembly is equally easy, and the whole process may be readily and quickly carried out by the maintenance fitter on the spot, with no danger of affecting the setting of the instrument.

Radiation Ltd

RADIATION HOUSE, ASTON, BIRMINGHAM, 6

London Showrooms and Office : 7 STRATFORD PLACE, W. 1

"thanks and appreciation"

"28th October, 1944.

"Dear Sirs,—I wish to take this opportunity of expressing my thanks and appreciation to you for supplying me with a Main '57' Cooker. For many years I have made cooking my hobby, and have used all kinds of cookers both here and in Canada, but have never found any to cook with as little trouble as this Main '57.' It is absolutely foolproof.

"At first when I saw it was side heat I felt somewhat disappointed, because I was of the opinion back heat was the best —but not since using this cooker. I have tried everything from a slowly-cooked milk pudding to a very hot oven for puff pastry, all with absolutely the minimum of trouble and complete success.

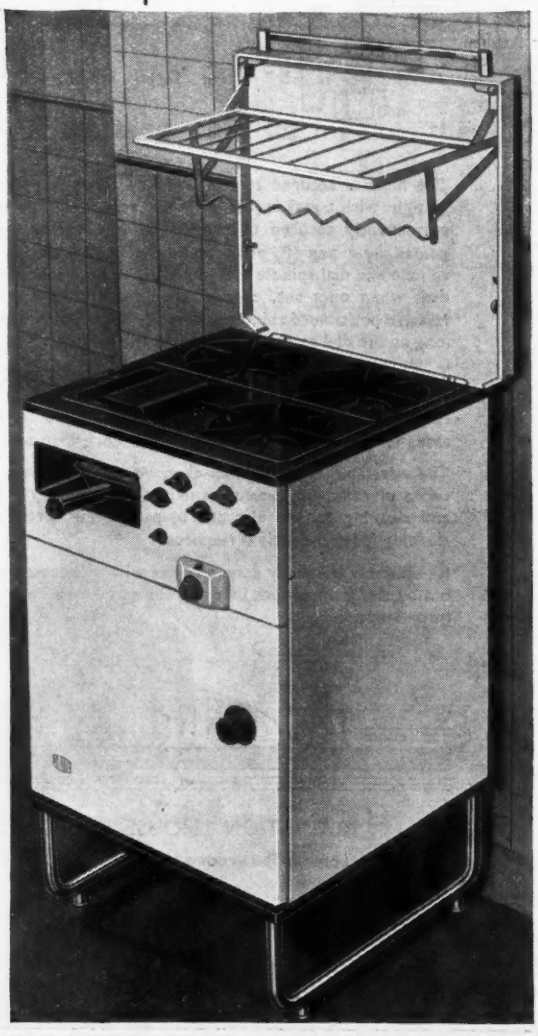
"Yours faithfully, (Signed)———(Mrs.)."

—An extract from a Consumer's letter to her Gas Company

Mrs. ——— is doubly fortunate. First, in being able to get a gas cooker of any kind in these days of scarcity, and second, that the cooker is a Main '57,' the perfectly streamlined model whose first appearance just before the war introduced so many revolutionary advances in its design and construction.

The '57' has already made many friends and when we are at liberty again to produce it ad lib., we expect its circle of friends to grow. Meanwhile, we thank Mrs. ——— for her appreciative letter, and also the Gas Company for so kindly sending it on.

And the Cooker referred to



MAIN

R. & A. MAIN LIMITED
LONDON AND FALKIRK

Gas Appliances for Domestic Cooking and Heating
Large-Scale Cooking and Service Apparatus

C.1

COMPANY MEETINGS—cont.

A bomb fell on the water gas relief holder, which was destroyed, together with several adjacent mains and a purifier box. The power house was wrecked. The coke grading plant and concrete hoppers received a direct hit and were badly damaged. The wharf store, containing silica material and conveyor spares, and a large storage tank adjoining were destroyed and many thousands of gallons of tar flowed into the surrounding roads and craters. The Marine Parade offices were badly damaged by blast and splinters. The viaduct and coal stores were hit, and a crane and several conveyors and telphers were put out of action.

Many gas, tar, and other mains, roads, sidings, vehicles, and electric cables were damaged, and in Marine Parade the Corporation's high tension electric cable was severed. That, coupled with the destruction of the power house, left them without electric power, and was one of the principal reasons for the stoppage of the manufacture of gas. A number of the Company's houses were destroyed and others damaged. Two other gasholders were perforated and gas from one a was set on fire. Several unexploded bombs were located and dealt with, and the high tension electricity supply was restored two days after the raid. Further unexploded bombs were found in various vital parts of the works. These were dealt with by the third day, but on the fourth day, before gas-making could be commenced, a delayed action bomb exploded, again severing the high tension cable. Gas-making was eventually commenced a week after the raid, to the extent of about one-third of the normal output. By Oct. 22 that increased to over 60%, and 75% of the normal output had been reached by Nov. 1.

During the evening of Nov. 23, 1940, the central showrooms were hit and the whole block was gutted. The Fire Service, although hampered by shortage of water, did good work in confining the fire to the old building and so saved the office portion. Later in the evening, however, a high explosive bomb exploded in the temporary drawing office on the top floor of the office building and passed through two more floors. The drawing office was burnt out and many valuable drawings and records were destroyed.

Six high explosive bombs fell on the gas-works. One holder was strained and fired. the blacksmith's shop was demolished, half of an exhauster house was damaged by fire and blast, and several walls and roofs, repaired since the earlier raid, were destroyed. The Woolston showrooms were badly damaged by blast and the flats above were rendered uninhabitable. Intense attacks on Nov. 30 and Dec. 1, 1940, resulted in but slight damage to the works, but the distribution offices at Portland Terrace were gutted and most of the office records were destroyed. The Portswood showrooms were demolished by a high explosive bomb. Considerable damage was done to mains and services and the system was badly waterlogged. Many of the trunk mains were fractured. On the morning of Dec. 1 there was a complete absence of water, steam, and electricity at the works. Gas-making had to cease, and it soon became necessary to shut off supplies to the town. Most useful help had been afforded the Company by the Portsmouth and Bournemouth Companies, both of which sent men and loaned pumps to assist in the repairs to the mains. Gas-making was resumed on a small scale on Dec. 4, and by Dec. 16 about 40% of the normal output was being supplied. By Dec. 23 supplies were fully restored, with the exception of those to the lower part of the town.

On July 8, 1941, the last raid occurred which caused serious damage to the works. The electricians' shop and foremen's office were gutted, and two overhead 30 in. mains, the inlet and outlet of No. 1 holder, were struck by an oil bomb. Gas ignited and the holder discharged 1,750,000 cu.ft. of gas into the air. The fire spread and ignited the oil in the tank of No. 7 holder, and damaged the governor house, purifier house, and oxide shed. The booster house was burnt out, including two boosters driven by 155 h.p. motors. Thirteen houses belonging to the Company were destroyed. Practically all communication between the holders and the district was cut off, and the supply of gas ceased immediately. It was resumed to a portion of the Company's area within 48 hours, and full supply was afforded by July 16. Further raids caused damage to the distribution system.

Since the beginning of the war the Company had sustained 240 fractured mains, including six of 18 in. to 24 in. diameter, and about 4,000 houses had had their gas service temporarily or permanently cut off. The repairs necessitated by the raid in September, 1940, were effected with the assistance of various contractors in what, under the circumstances, must be considered very good time. The carburetted water gas plant was fully available by the following July, and the intermittent vertical retort installation was brought into use in the following December.

The Chairman said warm thanks were due to the staff and employees for their devotion to duty, and to the members of the works platoon of the Home Guard, the various A.R.P. stand-by men, the Red Cross section, the Fire Brigade, and the firewatchers for all they had done.

Mr. CARMICHAEL associated himself with the tribute paid to the works and distribution staffs. The A.R.P. organization, which had been maintained day and night since September, 1939, had worked excellently and had received frequent commendation from outside authorities.

Brighton, Hove and Worthing

The Annual General Meeting of the Brighton, Hove and Worthing Gas Company was held on Friday last at 5, Great Winchester Street, London, E.C.

Mr. A. M. PADDON, M.Inst.C.E., the Chairman, who presided, said: This is the first occasion for some years that the directors have been in a position to present a completed statement of accounts, and when you have considered it I think you will agree that it affords a considerable degree of reassurance as to what has happened in the meantime, and also what we have before us in the future.

Dealing with the report, I think you will agree with me that the most significant statement in it is the reference to the slight increase in the dividend which we have been able to recommend to you, and which I have no doubt you will accept. As to the accounts, there is nothing to which I need draw your attention in the statements of capital stock and loan capital. In the capital account the only item of consequence is the fact that we had a credit amount of £36,484 against a trifling expenditure of £7,746, so that the position has been preserved in what I may call its relative excellence.

With regard to the revenue account, I will not indulge in any comparisons with previous figures, because the changes in the cost of materials, labour, and other details in that account are so frequent as to render any attempt at comparison illusory and positively misleading. The main fact is that we emerge with a slightly increased profit, which is reflected in the profit and loss account, where you will see that we brought in £16,929 and took out £17,306, an increase of slightly under £400. That has been arrived at after the most careful reservation of all the items in the revenue account. Those precautionary measures are reflected in the next account.

In the reserve fund account you will notice that we have withdrawn somewhat from it in connexion with the dividend, but it has been supplemented by the normal increase of interest on the investments, and it is left very much as it was a year ago. In contrast with 1938 there has been a diminution of £19,057, but when you see the amount carried forward to the next account, £169,000 odd, you will realize that the proprietors were entitled to expect, and we were entitled to allot them, a certain share of this addition. Therefore we emerged from this rather troubled period with practically the same resources in this regard as we had prior to the commencement of hostilities.

When we come to the special purposes fund you will see that that has been implemented by £4,000 from the revenue account. That is a fund which has had to bear, and will have to bear, exceptional burdens by reason of the ordinary conduct of the war. Then we come to the renewal fund account, and you will find that that has received from revenue account £10,000, and by the nature of the fund that increment is certainly called for. A renewals account can always be regarded as a floating balance to equalize expenditure upon the maintenance of properties from year to year and, inasmuch as that maintenance cannot be effected when it is called for by reason of the fact that you cannot get repairs executed now, it is necessary that the fund should be prepared for the drastic demands which will be made upon it in the future.

When you come to the balance-sheet you will see that there are considerable reservations to the same end. During the suspensory period we have not been able to carry out repairs and rehabilitations, but we must in future have to meet proportionately heavy charges. You will see that we have a reserve for War Damage Contributions of £44,242, a reserve for deferred repairs of £21,528, and another reserve, so that you will see that we have not been unmindful of what we may be called upon to meet in the post-war period. That does not necessarily mean that we have indulged in planning to any extent, but that is to meet charges and unavoidable outlays.

On the credit side of the balance-sheet you will see that our total quoted investments have a book value of £258,000, but on a valuation at the time the accounts were struck they were worth £316,340. I think we may reasonably expect that the more acute period of anxiety in connexion with the war is past. We cannot be sure, of course, and we may still have contingencies to meet, but you will gather from this summary of the statement of accounts that we go forward at least fully prepared and armed to meet what may lie before us in the matter of expenditure on replacements or extensions.

I should now like to say a word on the relationship between the Company and its employees. This is of a very exceptional character. It is based partly on the co-partnership system and partly on the ancillary funds in connexion therewith. It operates not only the co-partnership itself, but also hospital, sickness, obituary, maternity, and other funds which are necessary to the happiness and stability of the employees. What it means to us in the matter of finance is apt to be overlooked. The charge on the funds of the company is £43,578, which really amounts to the disbursement by the company of some 12s. a week for each of its employees. It must be remembered that with regard to the allotment to the co-partnership it is a purely gratuitous amount paid by the proprietors to the employees and that it is not contributory in any sense. The other funds are contributory, but not to an equal degree.

The pension fund stands at £303,348, and since its institution in 1921 it has made total disbursements by way of pension of £190,649. That fund is contributory in a certain way, but by far the greater part of the amount at which it now stands has been provided by the

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company to render the fund solvent. If we add together the co-partnership fund and the contributory pension fund we get something like £470,000. I cite those figures because they demonstrate very definitely what the Company has done, is doing, and is prepared to do for its employees in the future.

You may ask why I refer to this at this moment. The answer is that we are promised—or I might almost say menaced by—a governmental provision of general security and so forth. If that is so, it is almost impossible on financial grounds for such an organization as ours to carry its own burden as well as that imposed upon us by the Government. One of them must to a certain extent counterpoise the other. We can hardly expect that both could be supported at the same time. It really makes us anxious as to how far our scheme, which is so important and so complete in its provisions, can be maintained in face of a Government scheme of the description and scope envisaged. We do not know, however, precisely what the financial structure of the new Government scheme will be, but as far as we can gather it will require from its contributors—they will be compulsory contributors, I take it—a weekly sum little less than that required from the Company's employees under our scheme.

All these dispositions which I have referred to have been originated and effectuated by the Company and carried on by it with regularity. We have not sought outside aid or Government aid. We have done it by what is stigmatized by some as private enterprise. Of course, all this may not eventuate, but I think this is the proper time to draw your attention to what has been done, and can be done, independently of any Government augmentation, by private enterprise, and what may be the result if the present intentions of the Government are carried into effect.

The CHAIRMAN then moved the adoption of the report and accounts.

Mr. FRANK H. JONES, M.Inst.C.E., Deputy Chairman, seconded the resolution and it was carried unanimously.

Gas Undertakings' Results

Andover Lighting and Power Company.—Presiding at the annual meeting on Feb. 23, Mr. W. P. Clarke said gas sales at £32,174 in 1944, compared with £27,869 in the previous year, showed an increase of some 16 million cu.ft., and an increase of about 32 million cu.ft. over the last pre-war year. Net profit was £5,674, against £4,357. Provision had been made for deferred expenditure of £6,400. Mr. H. G. Broadbridge, Engineer and General Manager, had been in touch with the Borough Surveyor and builders in the town concerning the question of planning complete gas units for new houses, and he anticipated increased interest in all types of gas equipment in the future. A dividend of 6% on the Ordinary shares was declared.

Bournemouth Gas and Water Company.—Presiding at the annual meeting in London on Mar. 16, Mr. William Cash said gas sales in 1944 showed an increase of 15% over 1943, and of 16% over 1938, the last complete pre-war year. From net revenue £15,000 had been appropriated for deferred renewals, making a total reserve of £38,563. After paying full dividends on Maximum Dividend and Preference stocks and 8½% on Sliding Scale capital, £9,819 was carried forward, a decrease of £19,162 compared with the amount brought in. Since 1940 the Gas Industry had produced over 70% of certain requirements for one of the war industries for a product of primary importance, of which the Bournemouth Company's share was no small proportion, and the Industry had been publicly thanked by the Ministry. In addition, the Company had produced considerable other products needed for war purposes, and had taken part in research on its own works in conjunction with other bodies engaged in that important subject. In a tribute to the staff, Mr. Cash said they had worked well under difficult and trying circumstances, and supplies had been maintained except in isolated and individual cases temporarily disturbed by enemy action. The co-partnership scheme and pension fund continued to operate satisfactorily. The bonus for 1944 amounted to £16,538 at 8½%, making a total for the period from 1908 to 1944 of £297,608.

Farnham Gas and Electricity Company.—Net profit on gas revenue account for the year to Dec. 31, 1944, was £19,292. Sales of 1,856,045 therms of gas, less discounts, yielded £104,085. Manufacturing costs were £114,200, and distribution costs were £13,495. Payment of a final dividend making £6 2s. 6d.% for the year leaves an undivided balance of £9,303 to be carried forward, against £12,567 brought in from 1943. The capital account shows an expenditure of £8,859 during the past year on new plant, mains, services, appliances, &c.

Gloucester Gas Light Company.—With the report and accounts or 1944 the Directors have issued summarized details of the accounts for the years 1940–1943 inclusive, showing a steady rise in gas sales as follows: 1940, 3,288,701 therms; 1941, 4,090,484 therms; 1942, 4,665,070 therms; 1943, 4,988,120 therms. For 1944 there was a further increase of 453,241 therms, being 9.08% over the previous year. Consumers now total 20,639, of whom 8,488 use prepayment meters. The revenue balance carried to profit and loss account is £22,625, and payment of a final dividend of 2½%, making 5% for the year, leaves a balance of £17,204 to be carried forward.

Hartlepool Gas and Water Company.—Profit for the year, after paying Debenture interest and providing for taxation, was £16,473, and payment of a final dividend of 2%, making 4% for the year, leaves a balance of £23,524 to be carried forward, against £21690, brought in. Gas sales totalling 3,967,268 therms brought in £118,846, and the revenue balance carried to profit and loss account was £23,170. Capital expenditure on new mains, services, meters, and stoves during 1944 was £3,914.

St. Helens.—Mr. R. L. Greaves, Engineer and General Manager of the St. Helens Gas Department, reports an increase of 42% in therms sold in 1944 compared with 1939. The yearly figures for gas sold during the war period are: 1939, 5,013,006 therms; 1940, 4,703,539; 1941, 5,365,426; 1942, 6,332,120; 1943, 7,298,753; 1944, 7,131,921. The total income has correspondingly increased, the amount for 1944 being £417,813, compared with £201,577 in 1939. The value of authorized new capital plant installed in the war period is £288,270, and the reserve fund has increased from £4,974 to £30,020. Revenue contributions to capital during the period amounted to £20,000. The average price of coal increased from 23s. 6d. to 38s. 4d. per ton, and the average net income from gas has risen from 6.44d. to 8.63d. per therm.

Tottenham and District Gas Company.—Gas sales, at 27,690,310 therms, brought in £1,382,660 in 1944, against £1,270,619 for the previous year, representing an increase of 4.21%. The balance carried to net revenue account is £277,374, and after payment of Preference dividends at standard rates, an ordinary dividend of 5% for the year, co-partnership bonus, and providing £160,449 for taxation and £17,595 for war damage contribution, there is added to the carry forward a sum of £5,502. To meet increased costs the price of gas was increased by 0.6d. per therm and the special rebate of 0.4d. per therm was discontinued.

To Mark his retirement from Perth Corporation Gas Department, Mr. Robert Ford, who had been with the Corporation for 52 years, has been presented with a wallet of notes. Ex-Baillie Gowans, Convener of the Gas Committee, made the presentation.

Plans have been passed in connexion with extensive new works to be carried out at the Paisley Corporation Gas-Works. They include a new retort house and vertical retort bench, complete with waste-heat boilers and coal and coke handling plant, and independent coke storage bunkers for road and rail traffic, complete with screening and de-breezing equipment. The contract has been placed with the Woodall-Duckham Vertical Retort and Oven Construction Co., Ltd.

The Annual Meeting of the Institution of Chemical Engineers will be held at the Connaught Rooms, W.C. 2, on April 13, at 11 a.m., when the President, Mr. F. A. Greene, will give his Address. Following luncheon at 1 p.m., at which the principal speaker will be Sir Stafford Cripps, Minister of Aircraft Production, there will be a Paper by Messrs. H. W. Cremer and R. L. Fitt on "The Siting and Layout of Industrial Works."

A Meeting of the London and Southern District Junior Gas Association will be held at Gas Industry House on Friday next at 6.30 p.m., when a Paper will be read by Mr. A. G. Palmer, Acting Works Regulation Officer of the Gas Light and Coke Company, on "One Aspect of Works Regulations."

The Manchester and District Junior Gas Association will meet at Rochdale on Saturday next at 2.15 p.m., when a Paper will be given by Mr. W. P. Smith on "Producer Control."

Sales of Gas in Victoria (British Columbia) during 1944 were 320 million cu.ft.; calorific value, 463 B.Th.U.; meters, 6,950.

The Metropolitan Gas Company of Melbourne has, according to a cable received by Messrs. William Coward & Co., Ltd., declared an interim dividend of 5s. per share, payable on Feb. 16.

The Next Meeting of the Yorkshire Junior Gas Association will take the form of a Short Paper Meeting, to be held at Leeds University on March 24, at 2.30 p.m. The Papers to be read are as follows: "Detection and Estimation of Small Quantities of Gas," by N. B. Biggs, Halifax; "Test Data on a Multi-tubular Gas-fired Infra-red Oven," by W. A. Fitzsimmons, Bradford; "Recorders as an Aid to Scientific Control," by H. W. Kenworthy, Sheffield.

Aberdeen Town Council, at its last meeting, was asked to approve the expenditure of £1,000 to make good the damage caused to the Aberdeen Gas-Works by a snowstorm. It was reported to the Gas Committee that part of the roof of the horizontal retort house collapsed under the snow on Jan. 30.

The Musselburgh Town Council has approved all-electric facilities—cooking, heating, and lighting—in temporary housing to be erected at Stoneybank. The supplying company has notified a reduction in tariff to give cooking and heating at three farthings per unit, or for cooking alone at about 3½d. per day.

The fact that goods made of raw materials in short supply owing to war conditions are advertised in the "Journal" should not be taken as an indication that they are necessarily available for export.

GAS PRODUCTS PRICES—STOCKS AND SHARES

The London Market Mar. 19.

As from March 5, by the Coal Tar Products Prices Order, 1945 (S. R. & O. 1945, No.[*]229), the maximum price of Pitch for briquetting has been increased to 60s. per ton f.o.r. supplying works, and the prices for Road Tar, as fixed by the Coal Tar Products Prices Order, 1943, S. R. & O. No. 1528, have been increased by one half-penny per gallon. There is also an increase of 5s. per ton in the price of standard Creosote/Pitch Mixture.

The prices of other products are unchanged.

Control of Benzole and Coal Spirit Order, 1944 (S.R. & O. 1944, No. 172), is in force.*

By this Order the price of Motor Benzole is fixed at 2s. per gallon. The Order also lays down the method of evaluating Crude Benzole, and calls for periodical returns to the Ministry of Fuel and Power from all producers of Crude and Refined Benzole.

Control of Toluene (No. 4) Order, 1944 (S. R. & O. 1944, No. 170), contains an amendment of the Control of Toluene (No. 3) Order, 1943.

There is also the Control of Benzole and Coal Spirit (No. 2) Order, 1944 (S. R. & O., No. 988).

Coal Tar Products Prices (No. 2) Order, 1944 (S. R. & O., 1944, No. 1051), allows increases in the maximum prices for all forms of Naphthalene.

* Slightly amended by Control of Benzole and Coal Spirit (No. 2) Order, 1944.

The Provinces Mar. 19.

The average prices of gas-works products during the week were : Pitch and Crude Tar,* Toluole, naked, North, 90's, 2s. to 2s. 2½d., pure, 2s. 9d. (now controlled by S. R. & O. 1944, No. 988, operative from Sept. 1, 1944. Benzole and Coal Spirit, also Coal Tar Naphtha and Xylole, are now controlled by the Control of Benzole and Coal Spirit Order, 1944, dated Feb. 18, 1944, S. R. & O. 1944, No. 172, operative from March 1, and S. R. & O. 1944, No. 988, part 1, operative from Oct. 1, 1944, Carbolic acid, 60's, anthracene, creosote oil (hydrogenation), coal tar oils (timber preservation, &c.), and strained anthracene oil controlled by the Coal Tar Products Prices Order, 1943, dated Oct. 20, 1943 (S. R. & O. 1943, No. 1528), operative from Nov. 15, 1943, Naphthalene now controlled under S. R. & O. 1944, No. 1051, operative from Sept. 22, 1944.

Attention is called to Coal Tar Products Prices Order, 1945 (S. R. & O. 1945, No. 229), referred to on p. 305, "JOURNAL" of March 7.

* In regard to pitch and crude tar prices we would ask readers to refer to the editorial note on p. 396 of the "JOURNAL" for Sept. 10, 1941.

Scotland Mar. 17.

Market continues satisfactory with throughput well maintained. Refined tar*: Yield to distillers is 5d. per gallon *ex* Works, naked. Creosote oil: Timber preserving quality,* 5½d. to 6¼d.; hydrogenation oil,* 5⅞d.; low gravity or virgin oil,† 7¼d. to 7½d.; benzole absorbing oil,* 6½d. to 8d. per gallon. Refined cresylic acid* is 3s. 6d. to 4s. 6d. per gallon *ex* Works, naked, according to quality. Crude naphtha†: 6½d. to 7d. per gallon. Solvent naphtha*: Basic prices delivered in bulk, 90/160 grade, 2s. 8d., and 90/190 Heavy naphtha, Unrectified, 1s. 10½d.; Rectified, 2s. 2d. per gallon. Pyridine†: 90/160 grade, 13s., and 90/140 grade, 15s. per gallon.

* Price controlled. † Uncontrolled.

Markets took up a waiting attitude last week although the undertone was steady. A few British Funds improved towards the close on a slight increase in support.

There was no increase in the volume of business among gas stocks and shares but a number of prices made further improvement. Ordinary issues were more in evidence last week and recorded several gains, including the stocks of the two Indian companies. A feature was the sharp rise of 15 points in East Wight on the 6% dividend disbursement, while on the Newcastle Exchange Blyth ordinary, after changing hands at 125, closed 7 points up.

The following price changes occurred during the week :

OFFICIAL LIST

Alliance & Dublin Ord. (x.d.) ...	107—112	Mar. 12
Associated Gas & Water 4½ p.c. Red. Cum. Pref. (x.d.) ...	21/—22/—	,,
Ditto 4 p.c. Red. Cum. Pref. (x.d.)	20/—21/—	,,
Ditto 4 p.c. Cum. Pref. (x.d.) ...	18/3—19/3	,,
Bombay Ord.	42/6—44/6	+1/—
British Ord. (x.d) ...	132—137	Mar. 12
Cape Town 4½ p.c. Cum. Pref. ...	5—6	—½
Gas Consolidation "A" Ord. ...	22/6—23/6	+—/6d.
Gas Light & Coke 3½ p.c. Red. Deb. (x.d.)	99—101	Mar. 12
Imperial Continental Ord.	109—112	—1
Oriental Ord.	147—152	+2
Primitiva Holdings Ord.	11/6—13/6	—/6d.
Severn Valley 4½ p.c. Cum. Pref. (x.d.)	21/3—22/3	Mar. 12
South Metropolitan Ord.	93—96	+1
Swansea 5½ p.c. Red. Pref.	105—110	+1

OFFICIAL LIST—*continued*

Tottenham Ord.	119—124	+1
Ditto 5 p.c. Pref.	113—118	+3
Ditto 4 p.c. Deb.	100—105	+2
United Kingdom Gas Corporation Ord.	23/3—24/3	+—/3d.
Wandsworth 5 p.c. Deb.	126—131	+3

SUPPLEMENTARY LIST

Cheltenham & District Ord. (x.d.)	98—103	Mar. 12
East Wight	100—105	+15
Plymouth & Stonehouse 5 p.c. Deb. (x.d.)	120—125	Mar. 12
Uxbridge 5 p.c. Deb.	123—128	+1

PROVINCIAL EXCHANGES

Bath Cons. (x.d.)	114—116	Mar. 5
Blyth Ord.	124—126	+7

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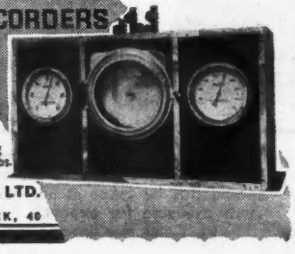
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WANTED.—FITTER MECHANIC for Gas-Works, must be thoroughly reliable and able to carry out repairs to coal and coke handling plant, steam engines, pumps, &c. Permanency for the right man. Minimum wages 95s. 5d. per 47-hour week; A.E.U. conditions.

Apply to N. B. Thompson, Engineer, Manager, and Secretary, North Cheshire and District Gas Company, Raglan Street, Hyde, Cheshire.

GAS PLANT CONTRACTORS and Chemical Engineers invite applications for post of JUNIOR TECHNICAL ASSISTANT and PLANT OPERATOR in London Area. Permanent employment Post-War. Apply No. 9415, "GAS JOURNAL," 51, High Street, Esher, Surrey.

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WANTED.—A Capable MAINTENANCE MECHANIC for a 2½ million cu.ft. per day gas-works. Must be experienced in general repairs to vertical retort plant, conveying and elevating machinery and the customary works exhausters, compressors, pumps, &c. The position is a Superannuated one.

Applications, stating Age, Experience, present post, wages required, also stating position in regard to the Essential Works Order, to be sent addressed: Mark Newsome, Engineer and Manager, Gas-Works, Chorley, Lancs.

CHEMIST required for Coke Oven and By-Product Plant in the Lancashire area. Experience in the refining of Benzole and Tar Distillation essential. Salary offered £225 per annum, plus existing bonuses, which increase this to £300 at the present time. Apply, giving full particulars of Age, Training and Experience, to No. 9419, "GAS JOURNAL," 51, High Street, Esher, Surrey.

WANTED. — Experienced travelling gas-works MAINTENANCE FITTER, used to maintenance and installation of engineering plant on small and medium size Works, age 26 to 45; must be able to drive car or van.

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ASSOCIATED Gas and Water Undertakings, Limited, invites Applications for the position of GENERAL MANAGER of the TAUNTON AND DISTRICT GAS COMPANY, the duties to involve responsibility for maintaining collaboration within the ASSOCIATED GROUP of Gas Undertakings (at present eleven) in the WEST OF ENGLAND. Salary £1,650 per annum.

Candidates should state their age and position under the National Service Acts and Essential Work Orders. The successful applicant will be required to pass a Medical Examination.

Applications (giving the names of three Referees, but unaccompanied by Testimonials or original documents) should be addressed to the Chairman at 2, Chart Lane, Reigate, Surrey.

March 15, 1945.

THE CAMBRIDGE UNIVERSITY AND TOWN GAS LIGHT COMPANY

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APPLICATIONS are invited for the position of TECHNICAL ASSISTANT at a commencing Salary of £350 per annum, inclusive of cost of living bonus. Candidates should have first-hand experience of the Technical and Chemical Control of Gas Production Plant (Horizontals, Verticals and Water Gas) and the recovery and working up of by-products, including the carrying out of all necessary tests.

Candidates should hold at least the Ordinary Grade Certificate in Gas Engineering of The Institution of Gas Engineers, or equivalent qualification.

Applications, which must be made on the form obtainable from the undersigned, should be received not later than Monday, April 9, 1945.

J. HUNTER RIOCH,
Managing Director and Secretary.

CITY OF CARLISLE

(GAS DEPARTMENT)

DEPUTY ENGINEER AND MANAGER

THE Gas Committee invite applications for the position of DEPUTY ENGINEER and MANAGER to the above undertaking.

Commencing Salary £500 per annum, with annual increments of £25, subject to satisfactory service, to £600 per annum, plus cost of living bonus, at present £59 16s. per annum.

Further particulars may be obtained from the Gas Engineer, Gas-Works, Carlisle.

Applications, stating Age, Qualifications, Training and Experience, accompanied by *copies* of three recent Testimonials and endorsed "Deputy Engineer and Manager," must be delivered to me not later than Friday, April 6, 1945.

Town Clerk's Office, Carlisle. Mar. 14, 1945.

FREDK. G. WEBSTER, Town Clerk.

CITY AND ROYAL BURGH OF EDINBURGH

(GAS DEPARTMENT)

ASSISTANT WORKS SUPERINTENDENT

APPLICATIONS are invited for the position of ASSISTANT WORKS SUPERINTENDENT at the Granton Gas-Works of the above Undertaking.

Candidates must have first-class engineering qualifications with a sound training in modern gas-works practice, and have considerable experience in the control of labour.

The remuneration will be £375, rising to £475 per annum plus bonus (at present £60); free house, fuel and light is provided.

The appointment will be subject to the Corporation Superannuation Scheme.

Applications, stating Age, Experience, and Qualifications and also the position in relation to the Essential Work Orders, together with *copies* of recent Testimonials, should be lodged with the undersigned not later than the first post on Saturday, April 7, 1945.

15, Calton Hill, Edinburgh, 1.

JAMES JAMIESON, Engineer and Manager.

LONDON firm of Engineers, well established, with good connexions Gas, Oil and Mining and Railway Companies, would like to represent manufacturer desiring London office for post-war and export work.

Apply, in confidence, Taylor & Taylor, Solicitors, 70, Old Broad Street, E.C. 2.

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KEIGHLEY CORPORATION

(GAS DEPARTMENT)

TENDERS are invited for the supply, delivery and erection of a DRY PURIFICATION PLANT at the Thwaites Works of the Department.

Specification, Drawing and Forms of Tender may be obtained from the Gas Engineer, Cook Lane, Keighley.

Tenders, in plain sealed envelopes, endorsed "Purifiers," to be received by me not later than first post, Wednesday, April 11, 1945.

The Council do not bind themselves to accept the lowest or any Tender.

Town Hall, Keighley. March 8, 1945.

S. WALKER, Town Clerk.

RAWMARSH URBAN DISTRICT COUNCIL

(GAS DEPARTMENT)

TENDERS are invited for the supply of small unit totally enclosed Steam Driven Direct-Coupled AIR-BLOWER, details of which can be obtained on application to V. J. J. Siddons, Engineer and Manager, Gas-Works, Rotherham Road, Parkgate.

March, 1945.

A. H. JACKSON, Clerk to the Council.

COUNTY BOROUGH OF BLACKBURN

(GAS DEPARTMENT)

TENDERS are invited for the Supply, Delivery and Erection of a 5-million cu.ft. per diem ELECTROSTATIC TAR PRECIPITATOR.

Further particulars and Form of Tender may be obtained from the Engineer and Manager, Gas Department, Town Hall, Blackburn.

Tenders enclosed in a plain sealed envelope provided by the Gas Department, not bearing any name or mark to indicate the sender and endorsed "Tar Precipitator," should be sent to the Gas Engineer not later than 9 a.m. on April 3, 1945.

The Corporation do not bind themselves to accept the lowest or any Tender.

CHAS. S. ROBINSON, Town Clerk.

COUNTY BOROUGH OF STOCKPORT

(GAS DEPARTMENT)

TENDERS are invited for the supply of One Austin 2-Ton Long Wheel BASE LORRY, to be primed only.

Sealed Tenders in plain envelopes endorsed "Tender for Austin Lorry" should be delivered not later than Wednesday, April 4, 1945, addressed to the Chairman of the Gas Committee, Town Hall, Stockport. The Corporation does not bind itself to accept the lowest or any Tender.

Town Hall, Stockport.

ARTHUR BOND, Town Clerk.

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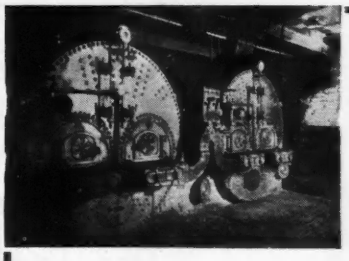

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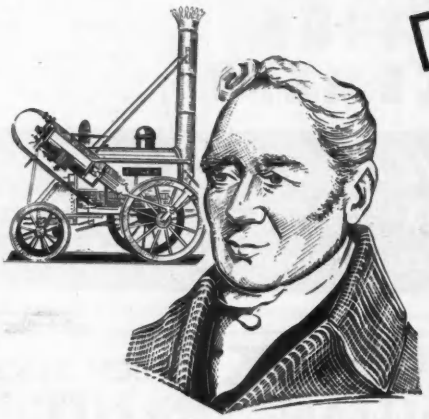

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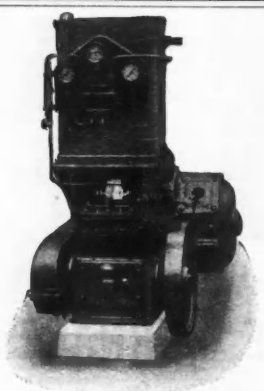

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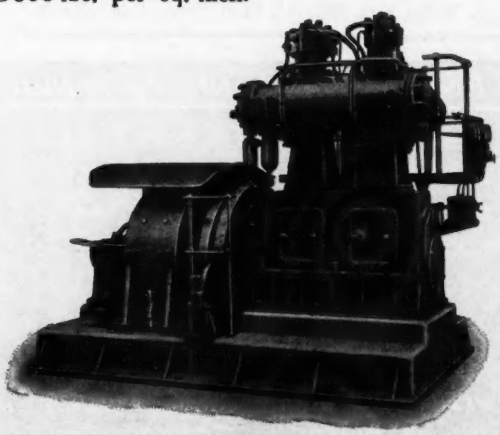
pressures up to 5,000 lbs. per sq. in.

The illustrations show two high pressure gas compressors which we made recently to order. As specialists in the design and manufacture of compressors for both air and gases, we make compressors for a wide range of capacity and pressure up to 5000 lbs. per sq. inch.

The compressor shown above has a capacity of 25 cu. ft. of free hydrogen per minute compressed to 3000 lbs./sq. inch. The illustration on the right shows a four-stage compressor with a delivered capacity of 200 cu. ft. of free town's gas per minute compressed to 5000 lbs. per sq. inch.



For full information regarding gas compressors, write, giving particulars of the duty required, to—

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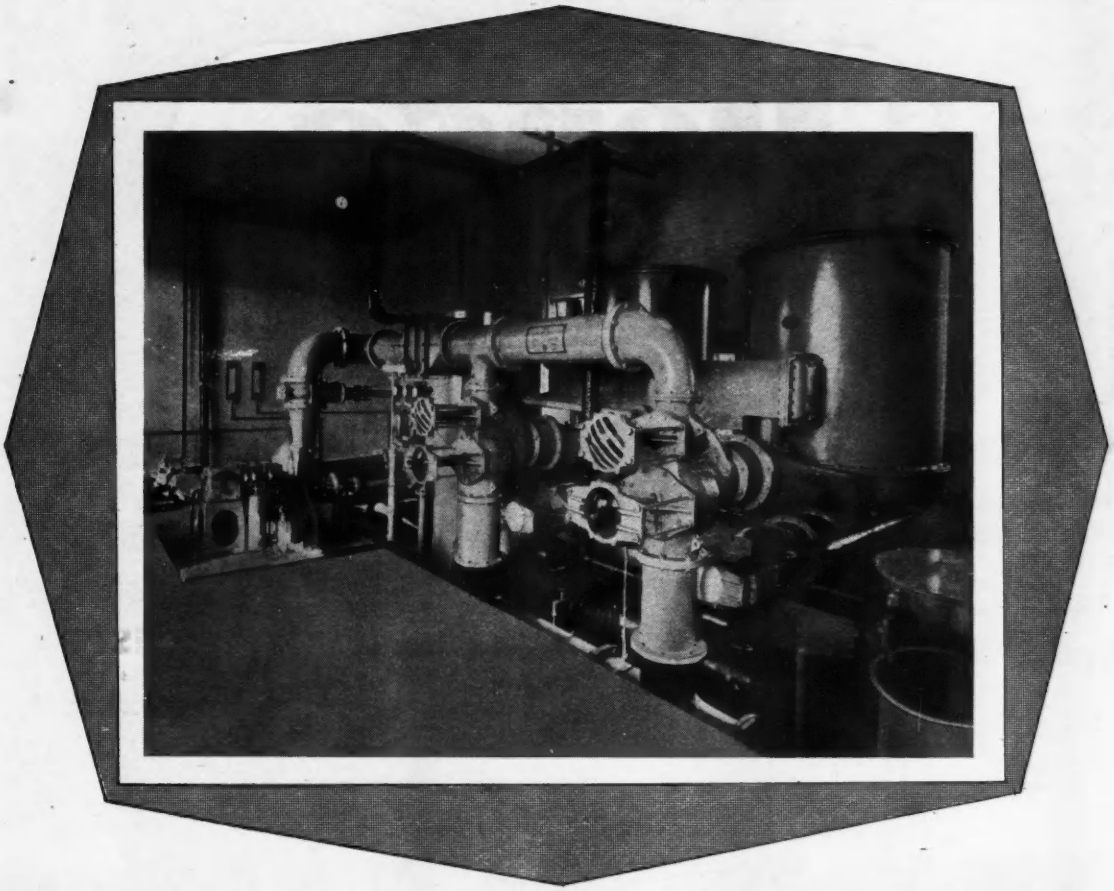

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They are the result of over 20 years experience in the manufacture and use of Active Carbon for recovery purposes in every branch of industry where solvents are used.

Sutcliffe Speakman Recovery Plants may be found in practically every Industry where Solvents are used. They range in size from a capacity of quarter of a million cu. ft. per day, up to 86 million cu. ft. per day, recovering millions of gallons of valuable solvent per annum, which would otherwise have gone to waste.

As applied to the Gas Industry, they extract the maximum amount of Benzole; 100 per cent. recovery having been recorded. The Benzole produced is water white, giving the highest possible distillation test. There are no secondary distillation products.

The complete unit is compact and occupies a very small amount of space. It is clean in operation, entirely automatic and has a minimum of moving parts.

There are no oil-sludging problems and no possibility of oil flooding either into gas mains or round the plant through blockages.

With all these advantages the cost of the plants compares very favourably with other systems. They are extremely economical in running costs and show a very handsome return on capital investment.

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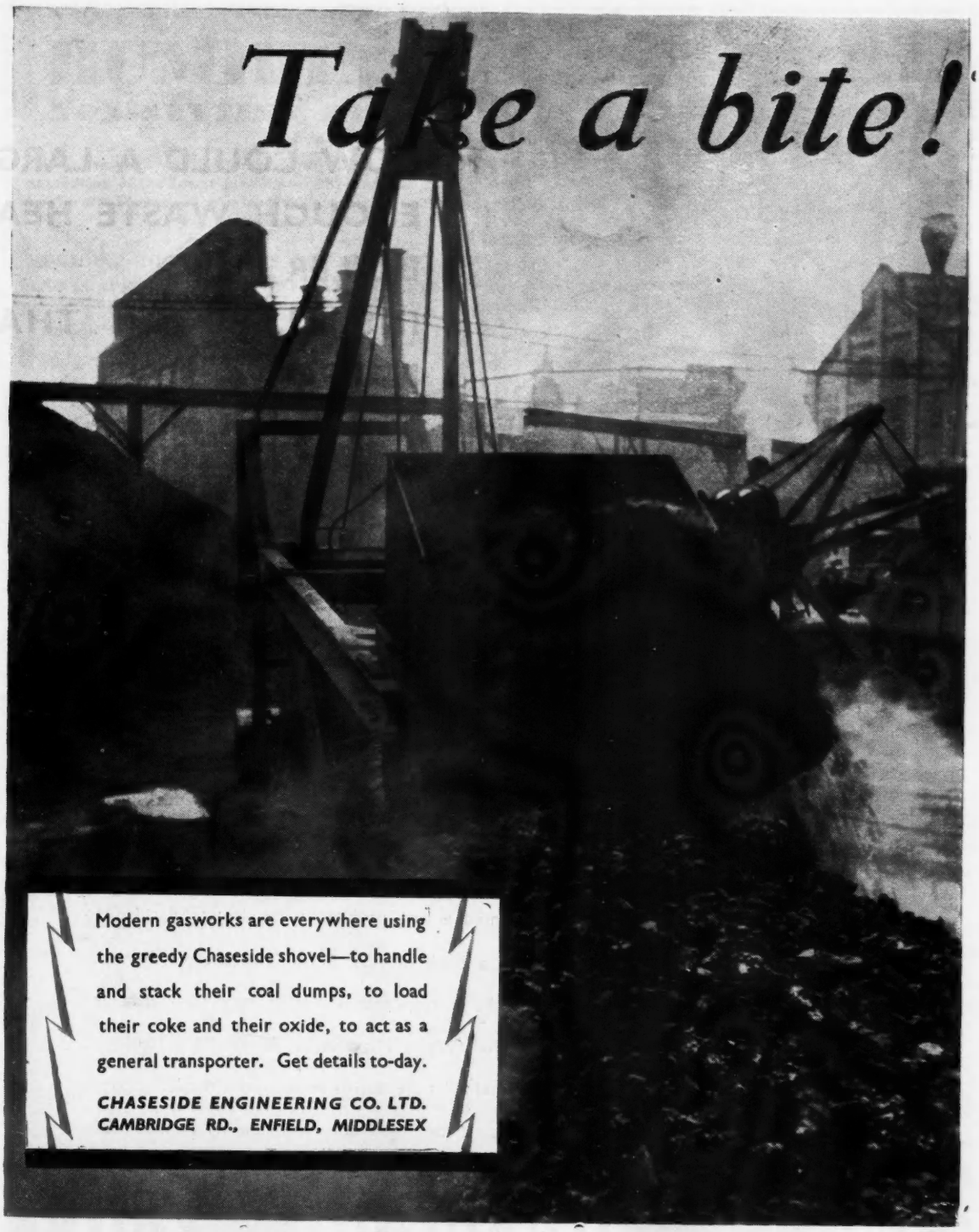

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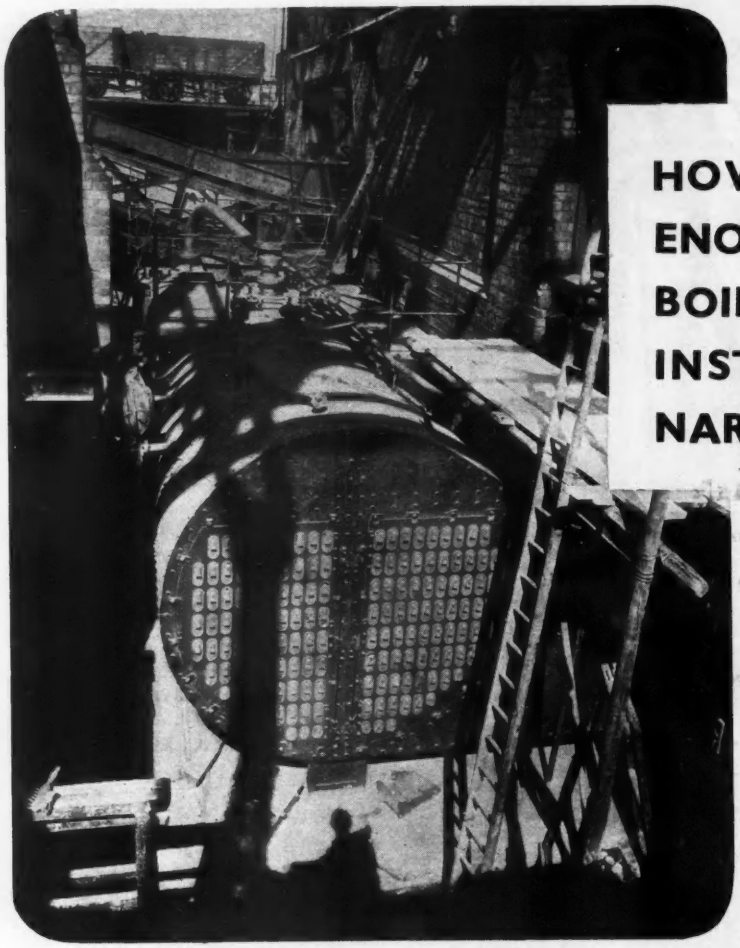

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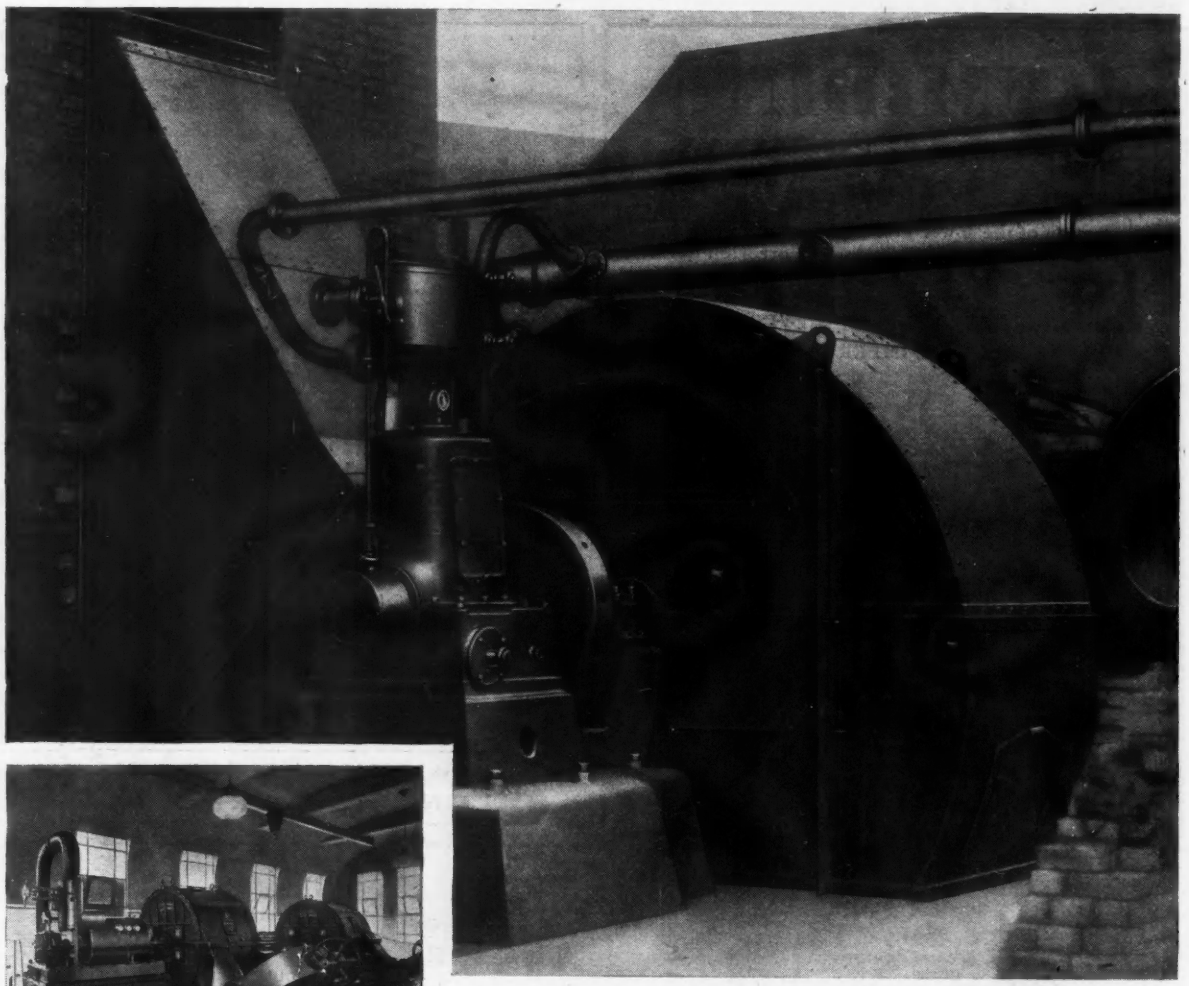
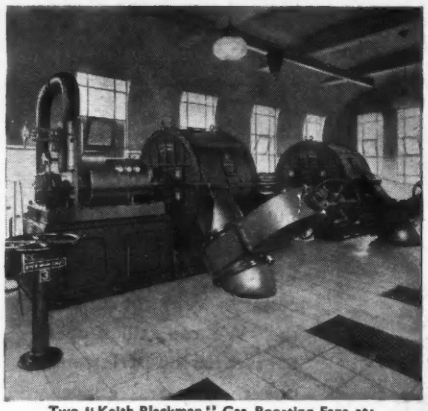


"Keith" Centrifugal Fan providing induced draught to boiler fires.



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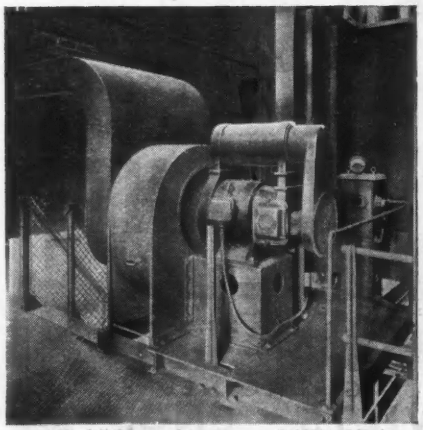
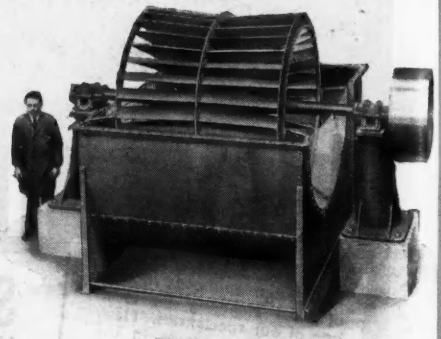


"Keith" Fan supplying air to a Cold Air Douche Plant at a Gas Works.

KEITH BLACKMAN FANS



Large belt-driven double-inlet "Keith" Fan with top casing removed.

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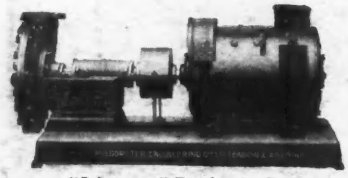

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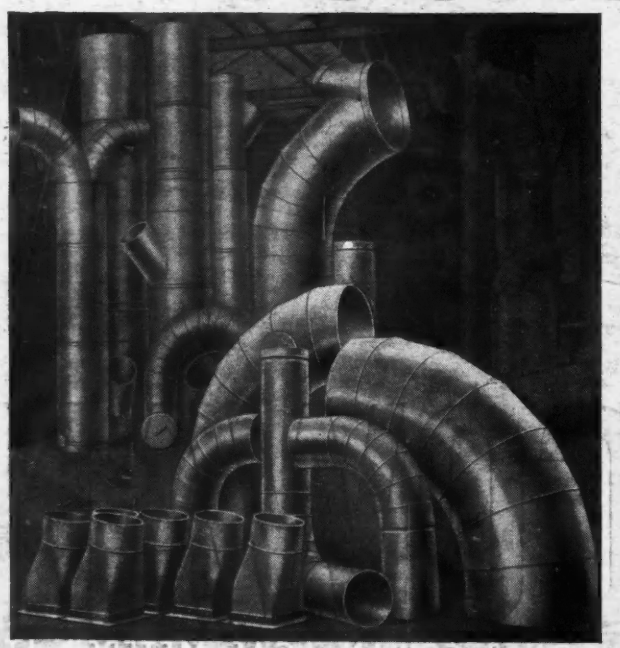
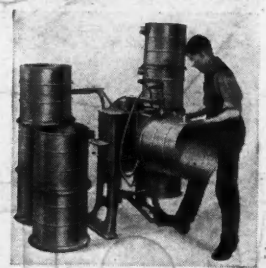
DUCTING *for*

VENTILATING AND EXHAUST SYSTEMS



REMEMBER WHO MAKES THEM...



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